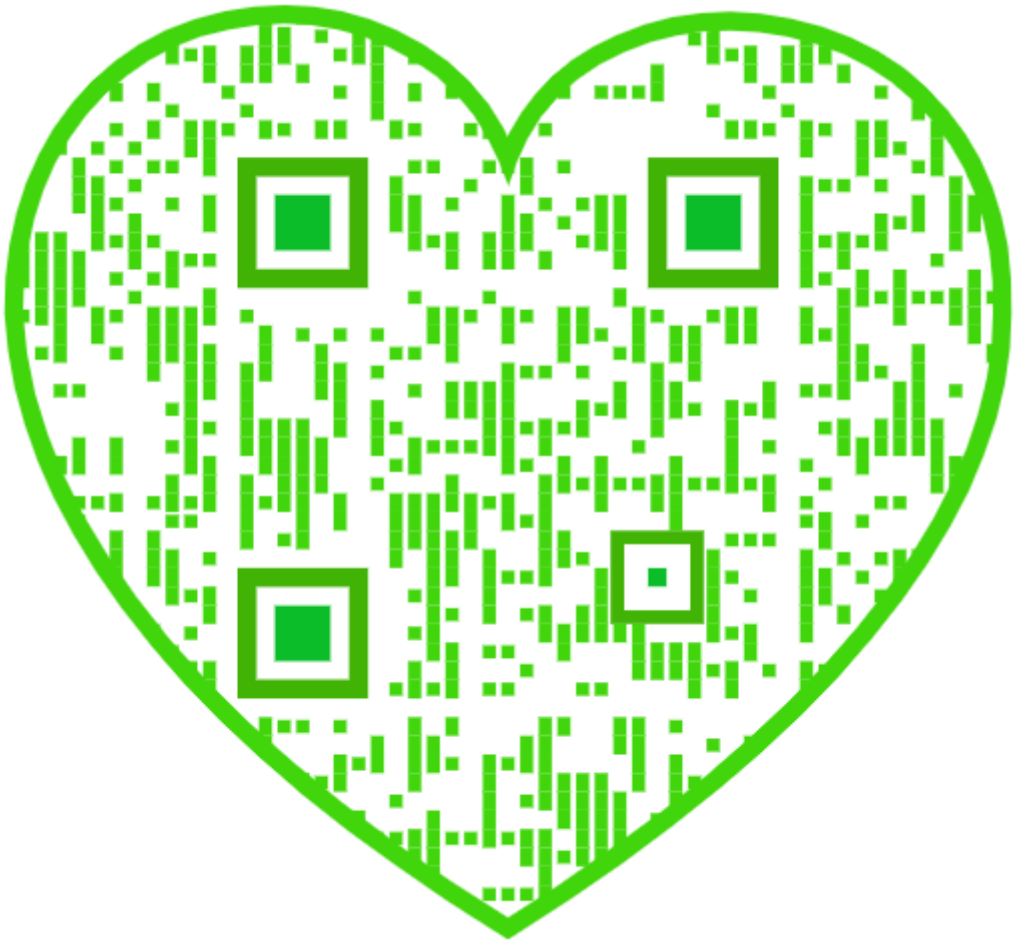

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NEILL ON CATARACT.

MITCHELL AND CO., PRINTERS, DUKE STREET, LIVERPOOL.

ON THE

CURE OF CATARACT,

WITH A

PRACTICAL SUMMARY

OF THE

BEST MODES OF OPERATING,

(CONTINENTAL AND BRITISH.)

By HUGH NEILL,

Surgeon to the Liverpool Eye and Ear Infirmary.

Deus nobis hæc otia fecit.

LIVERPOOL:

DEIGHTON AND LAUGHTON, (LATE GRAPEL.)

LONDON:

JOHN CHURCHILL: AND ALL BOOKSELLERS.

1848.

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TO

MY MANY FRIENDS IN LIVERPOOL,

FROM WHOM

I HAVE RECEIVED

SUCH REPEATED KINDNESSES, AS TO MAKE ME ADOPT,

WITH PRIDE,

THE CORPORATION MOTTO,

Deus nobis hæc otia fecit:

(MY LINES HAVING FALLEN IN PLEASANT PLACES.)

This Work

IS RESPECTFULLY DEDICATED,

BY THEIR OBEDIENT SERVANT,

HUGH NEILL.

MOUNT PLEASANT,

Liverpool, May 1 1848

PREFACE.

MOVEMENT and PROGRESS, are the characteristics, and order of the day. In this remarkable year of a wonderful century, they are at work either in revolutionising or in remodelling the whole face of Europe, and are sowing seeds which at their appointed season of harvest, will, universally recast the social position of the whole human race. To the epidemic influences alluded to, SCIENCE is no exception; for with science and art—through their respective votaries, under the guidance of observation and experience, which POLITICS never can monopolise,—*true progress* in a right direction has ever been an instinct and a passion.

Every lover of civilization, and of its advances nearer to that unattainable but still coveted thing "perfection," must admire the substantial progression of MEDICINE and SURGERY, during the present century. The medical men of this and every country, as if stimulated by a fraternal spirit of emulation, have nobly exerted themselves and done their duty. It is delightful to contemplate, what has been thus accomplished in England and the United States of America; as in France and ever-productive Germany. It is with pride too, that in my own favorite walk of the profession, I can point to such satisfactory evidence of the progress and decided improvement to which *Eye-surgery* has attained, as in a shape however humble I presume the following pages "*on the best modes of operating for the cure of* CATARACT" will amply attest.

A glance at the table of contents, before a sustained perusal of the body of the work itself, will best possess the reader with its scope and tendency. Here however, in the privileged place of a "preface," which (in keeping with the art and mystery of the "cunning device of printing") happily enables an author to edge in, as first—what in reality has been last written, of all his committed words:—I may be permitted to say, that many years have now elapsed since a *resumé* of British and Continental authorities upon CATARACT has been submitted in England. To do so, is the object of the present little volume, in preparing which it has been my endeavor to bring before the profession a digest of the *thoughts* instead of a literal or servile "translation" of the mere *words;* together with an analytical REVIEW of the leading contributions of eminent continentalists, on the *cure of Cataract.*

PART I.—My opening leaves from STOEBER, though they do not prove him to be infallible, will I am sure win for him the respect and liking due from every true-hearted lover of the literature of Eye-surgery. Victor STOEBER, is indeed a worthy pioneer. There is so much fair-play in enunciating his own opinions, and in his estimate of those of others, that he deserves—if for such virtues alone,—an emulous generosity from the hands of us all.

PART II requires little comment in addition to what I have there already put upon record, except as fresh praise to Alexander MAGNE. His chapter is pungent and practical, as a survey; and as such, will command its share of attention from practical men.

PART III.—Contains a digest of the views of L. A. DESMARRES, with an incorporated summary of practical remarks on the best mode of operating for cataract, grounded on an experience which I think it no egotism to consider as sufficiently extensive to warrant me in assuming the position of a reviewer; and to justify me, *ex officio*, after my long practice as operating-surgeon to a public hospital like the "EYE and Ear Infirmary of LIVERPOOL," in holding the opinions, and inculcating the practical precepts, I avowedly entertain. For reasons frankly stated at page 99, and on account of which I have no fear that M. DESMARRES will for a moment take umbrage, I pass from this part of my text declaring my conviction that whoever will undertake a *free* translation of the whole of DESMARRES' nine hundred pages on the Eye, will confer a material service to the general advancement of Ophthalmic Surgery, wherever the English language is spoken.

Such a treatise in an English dress, would constitute an addition worthy of companionship in every library, beside the systematic and admirable work of LAWRENCE—the work of a master in EYE-SURGERY, in contradistinction to the emanations of mere "*oculists*."

Of the well earned reputation of my esteemed instructor Mr. GUTHRIE, I have elsewhere had occasion to speak—and not less truly through a sense of inclination, as of duty. To him specially, for the most valuable part of my instruction in early life, in London, *on the diseases* and *operative surgery* of the EYE, do I owe a largesse of thanks; as I also do for the groundwork of my education in *general anatomy and surgery*, to my warm hearted master and professor—JOHN LIZARS, F.R.S., of Edinburgh.

The concluding part of my summary after page 162 contains, what I submit with great deference to the profession; and particularly what is urged by me in favor of the superiority of the needle operation by RECLINATION, over any other known process *for the cure of* CATRACT in general. On minor subjects, I need not unnecessarily swell this preface by further annotation: for which purpose, I shall also content myself with saying, that what I have added as my experience and opinion on the interesting effects of *Chloroform* and *Æther-inhalations*, are embodied advisedly, in the concluding article of this volume.

With such "last words" at parting, I now launch my little book to take its chance on the great sea of publication. It has been some months "on the stocks," and has been put together amid many interruptions. Whatever its shortcomings may be pronounced in a literary point of view, its composition,

"With all its imperfections on its head,"

has, while pleasantly engaging my spare hours of an evening, been sometimes a solace, and always a LABOUR OF LOVE, to the readers very obedient servant,

HUGH NEILL.

Mount Pleasant,
Liverpool, May 1st, 1848.

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CATARACT.

A distinguished Continental Author, VICTOR STŒBER, defines Cataract as an opacity of one or more of the parts which compose the Lenticular System. [a]

The so-called "Lenticular System" comprises the crystalline *lens*, its *capsule*, also a *fluid* within it technically known in honour of its discoverer as the humour or liquor of MORGAGNI. Definition and seat of Cataract.

Lymphatic exudations, pus, and hardened blood occupying a position in the front of the lens, have indiscriminately received the names of lymphatic—purulent—and grumous Cataract. Such however are false forms of the disease, of which I shall not now treat. Spurious forms not noticed.

The immediate cause of Cataract is not always the same, nor is it in all cases discoverable. Most frequently What is the immediate cause?

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[a] Manuel pratique d'Ophthalmologie, ou Traité des Maladies des Yeux, par Victor Stœber, Docteur en Medicin, agrégé a la faculte de Medicin de Strasburg.—PARIS.

In the languages most generally known over the Globe, the synonymes of "Cataract" (which word we adopt as if primarily of Greek bestowal in common with the French,) are chiefly, in Latin, *suffusio; gutta serena;* also the old Greek epithet *hypochyma.* But I have reserved the discussion, however brief, of synonymes and etymology, for a fitter place in the sequel.—H. N.

it seems to consist either in quick or lingering *inflammation* of the capsule; or in disordered nutrition of the apparatus of the lens. It is a curious fact that this part of the eye is subject to anomalies in the function of nutrition, similar to those to which the fibrous and cartilaginous tissues of old people are liable, and by reason of which they become cartilaginous or ossified.

May be caused by rupture of very small blood vessels, and by "softening."

Cataract is sometimes developed by deficient nourishment of the Lenticular System, ensuing upon the rupture of small but important blood-vessels subservient to the nutrition of the parts, and which rupture is caused by blows, falls, or violent commotions of the eye. In other cases the disease consists in *softening* ("ramollissement") of the crystalline lens.

Predisposing influences.

The predisposing and occasional causes of Cataract are old age, rheumatic and gouty affections; prolonged exposure of the eyes to too bright a light, or to acid or noxious vapours; ophthalmia, contusions and commotions of the eye, and wounds of the lens or its capsule.

Hereditary in some families

In certain families, Cataract is also hereditary, [a] in which cases it shews itself without any assignable cause, and at a more or less advanced period of life. Lastly, it may be congenital.

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[a] A curious case of hereditary congenital cataract occurred some years ago, in my hospital practice. An infant, a year old, was brought for me to examine its eyes, which were mal-formed, being exceedingly small; it was blind from congenital cataract. Upon inquiring if any of its relatives were blind, I was informed that its father was blind, and that his eyes exactly resembled those of the infant. I

The formation of Cataract is accompanied by different symptoms. Its approach at times is insidious, and stealthy, and such as wholly to escape notice. At first

Incipient symptoms.

Author's Hospital Notes:

saw the father, who was about forty years old, and had spent the greater part of his life in a blind asylum. He had central opacity of the Lens, which deprived him of all useful vision. The thought struck me that it would be interesting to operate upon both father and child at the same time. For a length of time he refused to undergo the operation, being quite satisfied with his condition; but as I declined to operate on the infant, unless *he too* would submit, he at last consented. The operations were performed upon both father and child the same day, and with perfect success.

I had a curious case in 1846, which I partly transcribe from the Hospital printed report of that year.

"Of the cases now in the Hospital, one deserves a little notice. It is that of a nice modest intelligent young woman. Her age is twenty-three, and she is married; from her gentle and quiet submission under operation, and her conduct during treatment, she has created a lively interest for her welfare among the visitors, and indeed throughout the whole establishment.

"Her story is this. Soon after her marriage her sight failed, and at last she became blind a few months before the time when she would become a mother. I can easily imagine her deep distress—her hopes of happiness broken down, her future prospects dark and lamentable: what under other circumstances would have been her *joy* was now her fear, her wretchedness. To be a blind mother; not to see her baby or its smile, or be able to watch its sleep and its happy dreams, nor to seen it in pain or in sickness; not even to see her husband, an industrious and thriving mechanic; not to be able to be his help-mate: dependent, young, yet blind; strong and otherwise healthy, yet useless. I saw her when she came to our Hospital, bowed down, almost to broken-heartedness. I shall not soon forget her expression when I pronounced the word *hope*.

Successful operation during pregnancy:

"I debated in my mind whether to let her hour of trial pass; or should I venture to operate, might I act as the instrument of the Great Power and open this poor woman's eyes before the time of her trouble. I did operate on both eyes, and she bore the process well. Not a particle of inflammation succeeded. The case is progressing most favourably, her health is good, her spirits are

there is slight uneasiness of the eye. [a] The patient sees objects as if in a mist. At an advanced stage, an opaque speck becomes perceptible on looking into the eye. Generally it is grey-coloured, white, or yellowish. Its most usual situation is behind the pupil. In proportion as this opacity increases, sight diminishes. Those who, at the commencement of this visitation, can still discern objects,—especially during the day, or with sufficiently clear light while the pupil is dilated; or when wearing convex glasses which enlarge objects, —go on from bad to worse, till unable to do more than distinguish day from night.

Progress of the disease.

The development of Cataract is more or less quick. Generally it is very slow—creeping over a period of months, even of weary years. Sometimes, especially after violent disturbance or injury to the eye, Cataract forms in a few days; or its progress is rapid at first, then slow,—or remains stationary for a while. Most

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high, her hopes are strong, and she feels that she has been blessed: she now can see, and she waits with patience and looks forward with pleasure to the time when (to use her own words) she shall be a happy, happy mother."

This poor woman frequently calls at the Hospital to shew the progress of her own eyes, and to exhibit her infant. She believes that the operation upon herself "broke the charm," and that otherwise her child would have inherited her blindness.—H. N.

[a] Persons coming from rural districts have frequently stated that although "now almost quite blind," they were unaware of the fact until miscalculating distances; as in crossing the ridges of a field instead of stepping on higher ground, they stumbled into hollow places. On other occasions they have put up the hand to rub the eye, and on closing the eye have *unexpectedly found* the other useless, and also the better organ to be in an imperfect state. So gradually does the darkening, or obscuring process go on, that accident alone discovers it.—H. N.

frequently it shows itself only in one eye, the other becoming affected subsequently. Occasionally it does not extend to the other eye, as where the causes have been entirely local. [a]

Diagnosis, obscure at first, and why. Sources of confusion and mistake.

The diagnosis of advanced Cataract, is not difficult, but its commencement may be confounded with incipient AMAUROSIS. These two affections are distinguished by the following symptoms:—

Sight: varies. Early symptoms of Cataract:—career of the disease.

In commencing CATARACT, the *sight* is disturbed as by a mist. It is better by a moderate or dull light—at evening for instance,—or when the patient turns his back to the window, than at noon-day. This is owing to the dilatation of the pupil, which takes place in the first class of circumstances, and which thereby admits the rays of light to enter by the sides of the crystalline lens, which are not so directly irritable as the centre is. Moreover, patients with Cataract usually walk with the head lowered before opening their eyes; and they can see objects on either side, while unable to distinguish those right in front of them.

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[a] Where Cataract exclusively attacks one organ, applies to cases where it is owing to causes of purely mechanical injury, (blows, wounds, &c.) and where the immediate, and otherwise imminent consequences, have been skilfully treated, and bad after-effects have, at the same time, been resisted by that enviable state of system, familiarly but happily described by the phrase "a *fine* constitution." There is much obscurity in a physiological, and still more in a pathological point of view, in satisfactorily explaining the somewhat quaint saying, "sympathy between the eyes." It exists, however, *in nature*, and is the subject of almost daily observation.—H. N.

Spectacles, how useful.

Spectacles, which cause the rays of light to impinge upon the circumference of the crystalline lens, make things more perceptible. The cornea, pupil, and iris are in a natural state, with their movements unimpeded.

Position of the opacity.

Lastly, the *situation* of the opacity is immediately behind the pupil, and most frequently commences at the centre of that opening.

Colour.

Its *colour*, as already stated, is either yellow, white, or grey. So much for incipient Cataract.

Contrast between Amaurosis and Cataract.

Whereas in commencing AMAUROSIS, impaired vision is often preceded and attended by flashes of light, [" fire in the eye,"] clouds of motes floating in the air, [*muscæ volitantes ;*] and obstinate head-aches. Sight is better by a bright light than at dusk or dawn. Besides, amaurotic patients seek the light and carry their heads high—like star-gazers, and do not distinguish objects at their side so well as they do those which directly face them. To them spectacles are of no assistance. The pupil is mostly dilated, with the iris immoveable and scarcely contractile.

The opacity accompanying amaurosis [a] is deeply, very deeply seated. It appears concave, and has a greenish hue.

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[a] Here the author, like most of the continental writers, couples or confounds AMAUROSIS with GLAUCOMA. In pure Amaurosis we have no *visible* change of structure; we have no *visible* symptom if we except the dilated and immovable pupil: but many cases of Amaurosis, at first apparently pure, run into Glaucoma.

CHARACTERISTICS OF CATARACT

IN RESPECT OF

I.—*Seat.*
II.—*Consistence,*
III.—*Form,*
IV.—*Relative Growth, Development, or Stage*; *and*
V.—*Colour.*

Characteristics of Cataract:—

Cataract presents a great number of varieties.

In respect of seat, it may be—

In respect of seat.

1st, *Lenticular.* This is the Crystalline Cataract of some authors.

2nd, *Membranous.*

3rd, *Lenticulo-capsular.*

4th, *Milky.* A form which corresponds to the Cataract of MORGAGNI.

According to the consistence in which the lens is obscured, Cataract is said to be *hard* or strong, *soft, fluid, cheesy, &c.*

Degree of obscurity:

GLAUCOMA is a strange disease. It may commence in any of the structures of the eye, and when it does commence it never ceases its wayward disorganising career, until it has *thoroughly* disorganised every structure it infests. So when Amaurosis is selected as its first step, the retina then being the first structure or tissue vitiated, the surgeon may pronounce the disease as purely amaurotic. In a few months the disorganisation goes on until the vitreous humour has become also tainted, and then appears the sea-green field at the bottom of the pupil—(the appearance calling for this note.) This insidious and *incurable disease* will travel still further on, and the lens, and even the tough sclerotic and hard cornea cannot escape its subtle, slow, involving progress.—

H. N.

Shape. As regards shape, or the configuration of the opacity, it may resemble a central dot; or it may be pointed, or star-like, or three-branched, or arborescent, *(dentritica choroidalis,)* or it may be like a girdle, or zone-shaped, &c.

Demi-Cataract. The growth obscuring the axis of vision, may occupy only one half of the lens. When so, it constitutes the "cataracta dimidiata" of authors.

Stage. Estimated by the degree or stage of its development, Cataract is *ripe* or *un*-ripe.

Colour. In respect of colour it may be white, like *mother-of-pearl*, or grey, or yellow, or black.

There is a kind of Cataract, the diagnosis of which, taken in connexion with the operation, is important, and of which therefore I ought to say a few words. Other forms are very rare, and I shall limit myself to enumerating them.

Limy, Cystic, and *Tremulous* Cataract. To the latter belong the *limy* Cataract, which in nature perhaps, more nearly resembles gypsum. Also the *cystic* Cataract, and the *tremulous*. [a]

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[a] *Tremulousness* is a characteristic of some forms of Cataract. It is frequently met with in eye practice. Cases seem to *swim*, or float as it were; and at other times they appear to *tremble*, like calves'-foot-jelly or blancmange when immediately placed at table. Stœber considers the phenomenon as dependent upon a "complication," as doubtless is the case. The Cataract in fact is associated with a portion of the vitreous or glassy body in a state of "break-up" (disorganisation), and which like a fluctuating or unsteady foun-

There is also the *pea-pod* Cataract *(arida siliquata)*, in which the lens becomes obscured and wastes away. The *pyramidal* Cataract, which emerges from the pupil and adheres to its edges; and *putrid* Cataract, so styled, because the *ichor* or fluid which is of a yellow citron tinge, is fetid, and collects within a sort of bursa. [a] It consists in the presence of a collection of pus, encysted between the lens and the posterior wall of the crystalline capsule.

Miscellaneous forms to be met with—in books.

But let us pass to forms of this interesting disease of paramount importance to be known.

Important forms:—

LENTICULAR CATARACT.

Lenticular Cataract consists in opacity of the crystalline lens. The opacity may exist a long time without inducing *darkening of the capsule.* It is most frequently met with in old people. It begins at the centre of the lens, but never attains so great a size as capsular Cataract, which is the reason why the sight

Lenticular Cataract.

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dation, imparts the peculiar tremulous motion to the Cataract. That is the PATHOLOGY.

I lately read a paper to the Liverpool Medical Society, in which I detailed the results of disorganisations occurring in the further progress of this species of Cataract—when by its spontaneous dislocation arising from the weakening or *ramollissement* of its capsule, it is set loose and launched into the chambers of the eye, and when spontaneous cure of blindness by the solution of the opaque substance will sometimes occur.—H. N.

[a] This alleged form of Cataract may be met with in books—very classically set forth; and where it may be found rejoicing in the somewhat pedantic terminology of *Cataracta cum bursa ichorem continente!*—H. N.

is never so completely in abeyance, and that between the lens and the iris a black space is discernible which is considered to proceed from the shadow projected by the iris upon the darkened lens, or from the non-opacity of the edges of the lens. This form of Cataract is dirty grey, whitish, or yellow-coloured. The opacity is more intense at the centre, and is frequently less so, towards the circumference.

CAPSULAR CATARACT.

Capsular Cataract.

Cataract of the Capsular or membranous kind, presents three varieties:—

Its varieties:

1st, Anterior capsular.
2nd, Posterior.
3rd, Complete.

Between these respectively, the characteristic difference depends on whether it is the *anterior* wall of the capsule, or the *posterior*, or if it is the *entire* capsule which is obscured.

The first is the most frequent. It rarely commences at the centre of the pupil; oftener at the edges from one or several whitish points. Its growth is quicker, and acquires a greater extent than lenticular Cataract, and makes more complete inroads towards the utter abolition of vision. The darkened capsule swells, especially where it approximates to the iris, and to which it sometimes adheres. No *shadow is observable between the edge of the pupil and the Cataract.*

Anterior capsular Cataract is of an unequal white and blackened colour. There are intermediate spaces or striated points which are neither opaque nor in the least dim. It is almost invariably accompanied by opacity of the lens.

Anterior Capsular Cataract: its Concomitants.

Posterior capsular Cataract is very rare. It presents a greyish opacity, is unequal, concave, deeply seated, and does not materially interfere with vision.

Posterior capsular Cataract

It is impossible to distinguish darkening of a portion of the *hyaloid* membrane, which like drapery overhangs the anterior concavity of the vitreous body. This is the dimness which we are told constitutes the "hyaloid Cataract" of books; but its existence as yet is problematical.

"Darkening of the *hyaloid* membrane."

Complete capsular Cataract presents similar symptoms as "*anterior.*"

CAPSULO-LENTICULAR CATARACT.

The *capsulo-lenticular*, has likewise been described as crystillino-capsular, or *mixed* Cataract. It grows by super-position. There are two opaque folds or layers together. You see a grey or whitish but equal obscurity extending across less obscure portions of the capsule, which have a blackened aspect. This Cataract being very voluminous, comes in contact with the pupillary edge of the iris, whose motion it increasingly embarrasses, and at last wholly abolishes the sight.

Capsulo-Lenticular Cataract:—

How it forms; and abolishes the sight.

MILKY CATARACT.

Milky Cataract.

In *milky* Cataract, which is the "Cataract of Morgagni, the peculiar fluid named in honour of that old anatomist and discoverer, is perturbed. The disease is

How to investigate it.

characterized by a milky appearance. If the eye is kept still for a quarter of a minute, it may be seen to be more intense at the most dependent part; but it becomes cloudy again when the organ resumes its rapid movements. The capsule and lens are not long in becoming involved: the latter is sometimes completely dissolved in the humour of Morgagni, and then constitutes *fluid Cataract*. This form of the disease is especially observ-

To be seen in Infants born with Cataract

able in infants affected with *congenital* Cataract.

Practical division:

Practically, one of the most important divisions of Cataract is in relation to hard, soft, and fluid.

Hard Cataract.

Hard Cataract is of a greyish yellow. The opacity is strong at the centre, but little diffused. Its growth is creeping, and it only incompletely abolishes vision. The lens is more or less indurated. At times it is "horny;" but it is always softer at the circumference than at the centre.

Soft Cataract.

Soft Cataract is white, flocculent, and unequally obscure. It completely interrupts the sight, and chiefly attacks those who are slightly declined into the vale of years. It is capsulo-crystalline Cataract, which principally presents this softening, and which in degree is more or less marked: hence the descriptive epithets of *gelatinous* and *cheesy*. It is also right to add, that at the centre, the lens almost invariably has a harder nucleus.

Central and Black Cataract are the only other varieties which merit separate notice.

Black Cataract has often been confounded with AMAUROSIS. In this form of the disease, the colour of the lens is more or less deep. The pupil becomes of a dull black, and fails to reflect the images of the person who examines the eye. Besides, the mobility of the iris and the diminished disturbance of sight during feeble light, distinguish this form of Cataract from AMAUROSIS. Black Cataract.

So long as Cataract is in process of development, it is technically said to be *immature*: on the other hand it is "mature" when the morbid work, which gives it birth, is accomplished, and its product remains. Application of the term "immature."

It may be impossible to pronounce in some cases whether the morbid process is in operation or not, inasmuch as Cataract sometimes remains stationary at intervals, or advances slowly. But in every case while it is on the increase, it is unquestionably *not* "ripe," and the *operation is contra-indicated*, because it would set up either very severe inflammation, or cause a transposition (metastasis) of the mischief, to the vitreous humour, or to the retina, ending in GLAUCOMA, or in Amaurosis. [a] Intermittent progress of the disease,

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[a] Quite a Theory! Practice shows that transparency may be obtained by operating upon a lens in any stage of opacity, imperfect or perfect;—*ripe* or *unripe;* without mischief too.—H. N.

Complications :— Two especially important.

Cataract is not always a simple malady existing independently. It may be complicated with other general and local diseases: for instance, it may coexist with Gout, Syphilis, adhesion of the Iris *(cataracta accreta)* Staphyloma, Specks, Amaurosis, Glaucoma, &c. &c. The last two complications are occasionally difficult to make out at their commencement; and yet their diagnosis is most important—because their presence is unfavourable to an operation.

Cataract with Amaurosis.

Cataract accompanied by AMAUROSIS *(amaurotic cataract)* is generally characterized by absolute blindness, and immobility of the pupil. Yet when Amaurosis is only incipient, the twofold symptoms do not exist; and contrariwise, both may exist with Amaurosis when the Cataract is extremely voluminous, the opacity very intense, and the crystalline capsule actually adherent to the pupillary edge of the iris. In cases of this description, attention should be paid to the course which the disease has taken. Thus, if during the increase of the blindness the patient has been tormented with violent head-aches, or seen "flashes of fire," or floating motes; *(muscæ volitantes;)* and still more so if the sight has already become much impaired before any opacity was noticeable,—the probability is, that the case is one of Cataract *complicated with Amaurosis.* [a]

Suspicious symptoms.

Glaucomatous Cataract.

The complication of Glaucoma with Cataract, betrays itself by the greenish colour of the Cataract, by the

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[a] In the majority of instances where Amaurosis is complicated with Cataract, the former usually shews itself before the latter.—H.N.

immobility and dilatation of the pupil, and by the total blindness.

Fluidity of the vitreous humour ("Synchesis") accompanying cataract, is denoted by absolute blindness, and by softening of the globe of the eye. It is in such cases that we meet with tremulous Cataract, dependent (as was explained—see *note* and text at page 12,) upon fluctuation of a disorganized portion of the lens. "Synchesis"

Prognostications in Cataract, are never matter for trifling: on the contrary, they are always serious. Without undergoing an operation, recoveries are very rare, and avail but little, except at the outset of the complaint: and as to the operation itself, in the hands of many pretenders it miscarries too often. The prognosis is more favourable when Cataract is crystalline—of a medium extent;—or mature;—when it is a purely local disease; and when the eyes are well proportioned—the patient calm—the operator adroit; and when available adjuncts in behalf of the sufferer, are sufficient and well directed. Prognosis.

Under opposite circumstances, the prognosis is unfavourable. It is so especially when cataract is produced by a constitutional ailment which perseveres, or by one the developement of which has been accompanied by violent headaches. When unfavourable.

The operation succeeds better with elderly people of sound constitution, than with patients at any other period of life. Those of adult or full age are less favourably circumstanced, because they are more liable to inflammatory Chances of success among elderly, young and adult patients.

and nervous results, which are apt to assume a severer form than in the case of the elderly or the very young. [a]

Do short-sighted people see better, — and the long-sighted not so well — after an operation?

After an operation, the sight as may be supposed, is rarely as good as that of an eye which is sound. Yet it is remarkable that people who are short-sighted often see far better after the operation than they did before it, and that those who are long-sighted much less so, and are obliged to have recourse to spectacles, with glasses of biconvex power. [b]

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[a] If the remarks in the text are to be taken as embodying the observations of STŒBER, then they are at variance, I must say, with the tenor of my experience in hospital and private practice. It is quite true that the old and the young are less prone to violent inflammations than those in the robust prime of life. But then in middle life we have acute but *healthy* inflammation, which will yield when combated by the means medically and surgically in the operator's hands. Whereas, with the old we have often shattered constitutions, tainted by the artificial modes of life; and in the young those morbid hereditary conditions which refuse to submit to a rule of anti-phlogistic treatment—so that each period of life may fairly be put upon a par. And if the disease be *blindness* arising from *Cataract alone*, the sufferer — be he young, middle aged, or an ancient, may still fairly hope for an equal amount of benefit by operative surgery. — H. N.

I have an old person who submitted to the operation for the removal of congenital Cataract, when he was sixty years old. The central opacity had made him always have imperfect sight; and his convex eye made the matter worse by making him near-sighted. My old friend, now that he has free admission of light, requires no spectacles for ordinary purposes—and he walks erect. In his old age he is truly "Anthropos."— H. N.

[b] Dr. Carson, F. R. S., upon whom I successfully operated, (when upwards of 70,) had his eyes made equal to a telescope. He could see from Seacombe the face of the parish clock, and tell the hour across the Mersey, more than a mile distant.—H. N.

TREATMENT OF CATARACT.

Treatment of Cataract.

The treatment of Cataract consists commonly in the operation. [a]

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[a] Making the whole *treatment* of Cataract to consist "in the *operation*," was certainly, at one time, too much the vogue. Essential as the operation is, and no matter how skilfully performed, yet I undertake to say without fear of contradiction, not any successful operator either in this country, or in France, Germany, Italy, or America, neglects the all-important adjuncts. In fact, to assure success, most judicious and painstaking measures — with attention to DIET and REGIMEN as well as to GOOD SURGERY—are alike indispensable, *both before* and *after the operation*. I have the vanity to consider myself a successful operator, and if it be egotism to speak from the results of 600 operations, publicly verified, then am I also an egotist in priding myself in the reasons for the success attendant on my operations. The secret is, I have sedulously cared for that result by studying the most likely means to *secure every possible advantage to the patient:* and I am confident that the explanation of the triumphs of favoured and distinguished Hospital operators, in every field of surgery, when analysed, will be found also in this: that however adroitly the operation is performed, through the exercise of natural gift, perfected by frequent practice, which begets "a property of easiness"—still *eminent success* is owing to the coalition of pains-taking surgery, with due management of the system *before* and *after* the operation, as much as to enviable address in handling the knife or needle. When asked by young surgeons how sound reputation is to be won and maintained, my answer is, by the *two classes of essentials going together*:—adroit operating, preceded and backed by judicious diet and treatment. In proof, need I instance the brilliant career of Dupuytren, and the lamented Liston, or of Brodie, Guthrie, and Lisfranc. I am aware, in particular as respects the two former, that their genius for operating, has been craftily praised with intended disparagement to their surgery. But the average of success which has crowned their achievements, amply refutes the weak invention of such enemies. When looked into, the preliminary and after treatment of all great masters in surgery, will be found to have been anxiously directed to the minutest details of management; and seen to, either by themselves in chief, or by most competent delegates.—H. N.

Constitutional remedies.

Cases no doubt have occurred, but they are assuredly rare, in which Cataract has been cured by the use of drugs. Recourse may be had to such means at the beginning, where the object is—to remove constitutional irritation,—to restore the secretions, and to improve the tone of the digestive organs. Local applications too, are of concurrent use.

When Cataract forms as a result of acute inflammation of the capsule, it may be advisable to take blood by cupping or leeches. Cold applications should be applied to the eye; counter-irritants to the temple; and the intestinal canal at the same time submitted to alterative and derivative influence, blue pill and aloëtics, either singly or together. Where the inflammation progresses less quickly, mercurial frictions round the orbit, tiny blisters, ammoniated pomatum, and tartar emetic ointment, are in request. Victor Stœber also observes, that in such cases antimonials, and affecting the system with mercury is the practice of some; and in addition to Aconite, Arnica, Belladonna, and above all, Pulsatilla, —the last being administered in doses varying from five to twenty grains of the extract. Usually all drug-remedies fail, and the operation alone is adequate to restore sight to the afflicted.

Counter-irritation.

Blue Pill and Aloëtics.

Use of Aconite, Arnica, and Pulsatilla —with condemnatory remarks in *Note*

Electricity: see *Note*.

Electricity and Galvanism have been equally vaunted.[a]

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[a] I am unable to say that I ever saw real benefit accrue from the application of Galvanism or Electricity, in *any form* of Cataract. I contend that both agents are contra-indicated, and that their use is bad and erroneous practice. Where service, however transient, appears to have followed from electricity or galvan-

But the operation itself, is not without its contra-indications. Among the number are the complications of Amaurosis, and Glaucoma, Synchisis, Hydro-ophthalmia, Syphilis, or of any other grave disease. The adhesion of more than a third of the iris to the crystalline capsule; also the critical periods respectively of teething in children, the eve of puberty in girls, or that of the final cessation of menstruation—(say from the age of forty to forty-five in the average,) are unpropitious. Infancy in itself, however, does not, as was at one time believed, contra-indicate an operation. When Cataract is *congenital*, little patients may be operated on in the first weeks of life: or at latest the operation should not be delayed beyond their second or third year. The object of this advice is, that

Cases in which the Operation is unfavourable or contra-indicated

Infancy *per se* no hindrance — frequently the very reverse.

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ism, it must have been confined to the *Amaurosis* where that form of complication existed. Pathologists who reflect, will, I am confident, be entirely with me; inasmuch as the *nature* of Cataract and that of Amaurosis respectively, *is* widely dis-similar: hence galvanic influence, or a current of electricity, where either happens to serve the *Amaurosis*, must be to the damage of the *Cataract*.

As a running commentary on the text, I have next to observe upon "Antimonials." *True* James's Powder is invaluable at times, as an adjunct, with or without Ipecacuanha in minute doses: for instance, constitutionally, where the liver is at fault, and the skin harsh and dry.

Belladonna I never now use in eye-practice, except externally.

Mountain Arnica, in certain cases, is admissible, as a *medicator* where stimulant fomentations are indicated: it is an acrid, but the therapeutic "virtues" attributed to this herb, are ridiculously overrated.

Aconite *(wolfsbane)* I declare to be never otherwise than a precarious, subtle, and dangerous poison —better left *out*. It lately proved fatal to one of the most amiable and able physicians of Birmingham, who, in spite of the best aid and most powerful stimulants, sunk under its sudden and deadly *cumulative* influence. And as to *Pulsatilla*, whether experimented with in *infinitesimal* or less scrupulous doses, I equally recommend being left to an undisturbed place, in the Quixotic Pharmacopœia of Homœopathy.—H. N.

Importance of sight to EDUCATION.

they may not be deprived of a SENSE so essential as *sight* is, to EDUCATION, and of which at a later time of life children never learn how to turn its then restoration to full advantage—whether through the tyrannizing force of "habit," by reason of the long exclusion of the sense of sight going along with their progressive experience of the nature of things slowly acquired through the medium of *touch* alone. Early operation is also enjoined with a view to avoid that excessive rolling of the eye-balls which is remarkable in people born blind, and which sticks to them for life, and is obviated only in those who have had the good fortune to be operated upon in early infancy.

Disagreeable rolling of the eyes observable in those born blind.

Cataract in the Gouty, Rheumatic, and Scrofulous.

Gout, Rheumatism, and Scrofulous affections, where possible, should be cured prior to operating. Where they prove intractable or are incurable, the operation should be proceeded with, although *then*, of course, the prognosis is a matter of difficulty.

When should the operation take place.

Opinions of authors and practical men contrasted.

So long as Cataract is immature, the operation is contra-indicated. Some contend that it is imprudent to operate so long as the patient can see well with one eye—a precept repudiated by others. There are those who operate upon the affected eye when the other perfectly fulfils its functions. They do so, because quaintly quoth they, "One sees better, you know, with two eyes than with only one;" and because the presence of Cataract in one eye is speedily followed by Cataract in the other. It is a delusion, however, to suppose that operating upon the eye which already has Cataract, stops the consecutive development of the disease in

the other. [a] Besides it happens, over and over again, that individuals carry a Cataract in one eye, for many years, and even to the day of their death, without the fellow optic becoming affected. [b]

Successive formation of Cataract in both eyes.

It is otherwise with those who, with a mature Cataract in one eye, labour under *the formation* of Cataract in the other. It then is certain that Cataract will *continue* to form; and it is to prevent the patient from being completely deprived of sight, for a dreary interval of indefinite duration, that we advise an operation on the eye in which the diseased product is ripe; for it would be an error to wait for the maturity of that in the other.

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[a] It is no delusion to say that the operation on one will sometimes save the other, for I have sometimes seen it do so. No case could better exemplify this than the case of Captain PATTERSON, of the Royal Marines. Cataract had fully formed in one eye, and the other was much affected. I was assisted in this operation by my friend Dr. THORBURNE. Capt. PATTERSON is alive and well now, and the eye which was not operated on has quite regained its tone. The gallant officer says, the other is a regular telescope, which he keeps for "long range." —H. N.

[b] This is one of the really forcible reasons why it is that an operation for Cataract in certain cases—as in rash or incompetent hands—is not simply useless, but pernicious. Beyond doubt, as STŒBER elsewhere ably observes, it (an operation) may involve unpleasantness more or less grievous. An injudicious operation sometimes sets up inflammation, and destruction of the eye so tampered with; thereby bringing surgery into discredit, and producing a deformity which did not previously exist. Every surgeon, competent by observation to bear faithful witness, will avouch the declaration that inflammatory action, after an incompetent or mal-adroit operation, is not always confined to the eye operated on: the sounder organ may share the mischief and be equally destroyed. A patient who *could see* "something," before his eye has been poked by experimentalists, may find himself quite blind afterwards. —H. N.

This brings us to another point :—

Important question as to double-operation.

When *both eyes are affected with Cataract, should they be operated for on the same day?* Authors differ. It is true, the chief accident to fear, namely inflammation after an operation, rarely attacks both eyes with

Consolation to the doubly afflicted.

equal intensity: and though the contrary will occasionally happen, yet the prospect must indeed be both blank and dismal in which one eye at least may not be saved.

Points for due consideration

When an operation has to be performed under unfavourable circumstances, or by a method like EXTRACTION, (the after-treatment for which, needs comforts and aids which may not be available to a poor sufferer,) then in that case a considerate operator will spare his patient and confine himself to one eye. But in favourable circumstances it will be better to take both eyes at a sitting, more completely to give patients the full benefit of the operation, without submitting them *twice over* to its risks and little unpleasantnesses.

PREPARATORY TREATMENT, &c.

Before being operated upon, patients should be put in the best possible condition. Those who are very irritable and faint-hearted, bear up under the operation with greater calmness, if they take a gentle narcotic: the "stoutly-timbered" require no such adventitious aid.

Suggestions:

For the twenty-four hours succeeding an operation, it is advisable that patients should be as quiet as possible: Hence, beforehand, it is well to administer an aperient in the morning, and if necessary, a "lavement," so as to avoid having to go to the water-closet soon after. A well-made bed should be ready; and a pillow of *horse hair* is preferable to a downy one of *feathers*—which will heat the head.

Management of patient immediately before operating

On awaking, or some hours before operating, drop into the affected eye two or three minims of a preparation of belladonna or henbane. Repeat this half an hour beforehand—to dilate the pupil, and also the better to see the Cataract and the instruments engaged in the eye. [a]

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[a] Batteley's Solution of Belladonna is a good preparation whereby to dilate the pupil. But the best for the purpose is a solution of the *Muriate of Atropina*. I am so particular in such matters of detail that I employ a formula of my own, prepared by a faithful chemist under special directions. It is colourless, free from smell, and a few drops of it effectually dilate the pupil.—H. N.

Operating room should be regulated:

The operating room should be clear and have only one window in use. Should there be more, pull down the blinds and close the shutters of all but one, in order that the rays of light from different sides, shall not strike the eye, and embarrass or hinder the operator from exactly perceiving the interior of the organ. Place the patient obliquely towards the window, so that the light may penetrate the eye from the side of the nose, and that the surgeon's hand be not intercepted, or in any way distressed during the operation. [a]

Position of the patient:

Some surgeons operate while the patient is stretched horizontally. But this position is embarrassing to the practitioner. Better seat him on a couch, without a back,

Of the assistant:

or on a high stool. An assistant stationed behind, applies one hand to the forehead, and another under the chin, and so retains the head of the patient in a steady position, either against his chest or the back of a chair. When the left eye is the subject of operation, the assistant's right hand should be applied to the forehead; and *vice versa*. Next, with the index and middle finger,

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[a] I have one of the prettiest little Eye Hospitals in the world. I have now seventeen beds, and room for thirty. The house is beautifully situated, with fresh air and good light. My wards are all small, each lighted by only one window, but with perfect ventilation. I can thoroughly exclude the light from any room, and yet have it well ventillated. My bedsteads are iron, and I have hair mattresses. Complete rest is enforced after an operation; and undue reaction (inflammation) is prevented by anti-phlogistic treatment made use of a few hours after operation. During the year 1847, only one case of operation for Cataract has had destructive inflammation. In former years, the number of cases I have successfully operated on for Cataract in this little hospital, is above *six hundred*.—H. N.

Management of the eyelids:

the upper eyelid should be raised and fixed against the rim of the orbit. The ends of the fingers should be clear of the lid, and without touching the *eye*, be nevertheless sufficiently near it, to touch the cornea—if the latter, in "*shying*" the instrument, seeks to hide itself under shelter of the upper portion of the orbit.

Relative position of the operator, &c.

The operator may stand, or seat himself so as to face his patient, whose head should not be higher than the shoulders of the surgeon, who, in his turn, should be able by looking down to see the interior of the eye, and not be obliged to keep his arm too elevated, which would fatigue him, and render less masterly the necessary manipulations of his instruments. When the left eye is under operation the instruments should be worked by the appropriate hand. With the forefinger of the hand that is disengaged, depress the lower eyelid: place the middle finger on the inner angle of the eye, and impart to those fingers a slight bias towards the eye sufficient to touch the *cornea*—should *it* direct itself, during the operation, towards the internal lower part of the orbit.

The Surgeon should be *left* as well as right-handed:

Pellier's Elevator:

Some surgeons prefer raising the upper eye-lid by means of Pellier's "*Elevator*," and even resort to the same instrument for depressing the lower. [a]

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[a] Victor Stœber gives a drawing of *Pellier's Instrument* in the affix to his work. It is a silver wire, doubled, with its ends bent in the shape of a hook. It may be used with advantage when the services of an intelligent assistant are not at command, or when the lids are short and peculiar. It is the very best instrument, and absolutely necessary, in elevating the lid in performing the operation for *strabismus*, or squint.—H. N.

How worked: To raise the upper-lid, introduce underneath it, the hooked end of the contrivance just instanced, and press the lid against the orbital edge. But less irritation will be occasioned by not touching the conjunctiva, (which should be avoided,) and the extremity of the instrument should be applied to the palpebral skin near the tarsal cartilage. By means of the curved part of the elevator, urge the lid into the orbit, and fix it there, by wedging the concavity of the instrument against the edge of the orbit. The assistant should keep the handle applied to the patient's forehead.

Rolling of the eye: Rolling of the eye, during the operation, may thereby render it difficult, or impracticable. As preventives, instruments have been devised named "ophthalmostats," or in English, *eye-rests*. But the use of all such implements which can be dispensed with, should be avoided. All irritate less or more, and some of them, violently.

Eye-rests:—remarks on their use and abuse: Occasionally, however, as with those who have been *born* blind, the eye is so restless, that from first to last the operation is impossible unless the undue motion is restrained. In such rare instances an *eye-rest* may be useful. [a]

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[a] Of such artificial and objectionable appliances, STŒBER awards the palm of merit to a certain warlike weapon, named—in honor of its inventor—"la *pique de Pamard*:" and a *pike* it is, though not so formidable as the French epithet would imply.—However, it is a *dart*, which VICTOR STŒBER describes as being "stuck or plunged (qu'on *enfonce* dans la sclérotique) into the sclerotic," at the outer and upper, or inner and upper portion, and which is "there to be held by an assistant." I need scarcely say, I more than merely coincide with the cautionary part of the remarks in the text: in short, I disapprove of the "dart," as with every deference Pamard's pike may be termed. Never yet have I been reduced to the extraneous aid of such questionable resources. The

A less dangerous method of controlling undue movements of the eye, is to keep up slight but sufficient pressure *on the eye* by means of pledgets of lint, or of a compress of charpie fixed by a bandage.

Tackle should be all in due order:

Before commencing the operation, the necessary instruments should be in readiness, besides the things already mentioned; namely Pellier's elevator; a charpie-compress, in lieu of Pamard's javelin; extra lint, and a spare bandage. Also, dressings and strips of gummed taffeta, mild adhesive plaster—compress and bandage—with or without a night cap to make all tidy. [a]

LEADING OBJECT OF THE OPERATION.

Aim in operating:

The operation for Cataract has in view *the removal from the axis of vision of the* OPAQUE PART *of the lenticular apparatus* which prevents the rays of light reaching the retina. This consummation may be attained in three ways:—

Three-fold means of attaining:

1st, By incising the eye and extracting the opacity.

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operators of this country rely more on the superior address and finesse of their art, derivable from practice, and the *education of the hand*, than on such fanciful devices of imaginative contrivance. Lawyers would call them "things of supererogation," and they are so.—H.N.

[a] To meet the occurrence of Spasms, fainting fits, vomiting, fright, &c., which may interrupt the operation, VICTOR STŒBER advises the providing of cold water, æther, and *laudanum*; of which last I disapprove—and would substitute the common 'Preston Salts' or smelling bottle containing some preparation of Ammonia—to be cautiously applied to the proper nostril. *Chloric Æther and Aromatic Spirit of Ammonia* (ten or fifteen drops of each) in a little water, speedily remove faintness. H. N.

2nd, By leaving the opacity in the eye after pushing it under the axis of sight:—that is to say by depressing it on the vitreous body.

3rd, By leaving the *opaque growth* in the eye, but by so incising or breaking it up, that it shall become gradually dissolved in the aqueous humor, and ultimately be wholly absorbed.

Extraction: Depression: Disruption:

Thus there are three principal operations for Cataract: namely, EXTRACTION;—lowering or DEPRESSION;—and DISRUPTION, or breaking it up into shreds and patches. Each method is preferable or objectionable *according to circumstances;* and although there are many Cataracts which may be indifferently operated for by any of them, yet there are also many which can only be managed with success by one of the three, exclusively. Accordingly, the professional man who can only operate by one method, is deprived of great resources, and must be frequently embarrassed. [a]

Observation as to:

OPERATING BY EXTRACTION.

As its name implies, this operation consists in *extracting* the Cataract, bodily, from the eye. It is done by an incision, through either the CORNEA *(Keratomy;)* or the SCLEROTIC *(Sclerotomy.)*

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[a] What I have to note here, more especially applies to what STŒBER lays down under the heading "2ndly," in the text. Old-fashioned "couching" is there implied; but *Reclination* is an operation to be explained hereafter. Its success may fairly be pitted against that of any other operation for Cataract.—H. N.

Extraction by the sclerotic has been abandoned. It never, as yet, has produced very favourable results: Accordingly in speaking of EXTRACTION, that by the Cornea is usually understood. Since 1745, when DAVIEL drew the attention of the profession to this method, (one until then seldom practised,) it has undergone various modifications; chiefly in respect of the construction of the instruments; the direction of the incision through the cornea; and the successive steps of the operation. I shall limit myself to a description of the process which I prefer, pointing out at the same time the various proceedings still in use, with the advantages and disadvantages of each.

Extraction by the *Cornea:*

Extraction presents the great advantage of rendering the sight clearer and quicker than any other method, without exposing the patient to a relapse. On the other hand it has the disadvantage of causing an extensive wound in the cornea, and of making the party more susceptible, and more subject to inflammations of the eye which may destroy sight; a result not always proceeding from incision of the cornea, but which may depend upon the disturbance experienced by the iris during the passage of the crystalline humor across the pupil. It is true this untoward termination of the inflammation occurs less frequently than might be expected —apparently because of the release, or expansion afforded, by the effusion of the *aqueous humor*.

Its advantages, and the contrary:

Extraction is recommended for patients who are only slightly disposed to inflammation: old people for instance. It is also recommended when the Cataract is

In what cases Extraction is eligible:

considered to be crystalline, or hard, or capsulo-crystalline, and the capsule, or the lens, in a morbid state. Also when Cataract has been treated unsuccessfully by some different method; or when the lens has fallen into the anterior chamber of the eye.

Where it is ineligible:

Extraction is unsuitable in the case of young inflammatory subjects: also when the Cataract is soft or fluid, and when the eye is too prominent—a condition which disposes to the escape of the *vitreous* humor: and if, on the contrary, the eye be too much sunk in the socket, incision of the cornea is thereby rendered difficult or impossible. Extraction is equally contra-indicated when the cornea is diseased; or when the anterior chamber is very narrow; or if patients are affected with chronic cough, or when they cannot repose upon the back, or when unable to procure that care which is more necessary after this than any other mode of operating.

Apparatus used in extraction.

The instruments necessary for the operation are:—1st, a cataract-knife: BEER's deserves the preference. 2nd, a needle for right Cataract, the sides of which should be very sharp. 3rd, a scoop, such as DAVIEL's. 4th, eye-forceps. 5th, a small hook. 6th, scissors, curved on the flat side.

In performing the operation, the knife is held in the first three fingers of the right hand when the left eye is operated on, and with those of the left when the right eye is affected. The fore and middle finger are applied to one side of the handle—the thumb to the other. The ring finger should be bent into the palm of the hand,

to prevent its impeding the process, and the little finger should rest on the patient's face so as to steady the hand. Next, introduce the point of the instrument perpendicularly to the cornea and within it, at the distance of half a line from the sclerotic, and at the external extremity of the diameter which divides the cornea horizontally into two equal parts. When the point of the knife has penetrated the anterior chamber (which is known by its brightness as distinguished from the dull appearance of that part of the instrument still remaining within the density of the cornea, and by the absence of resistance which is *felt)* the handle is directed towards the temple—so as to give the edge such a direction when drawn in a right line, that the point may come out at that part of the circumference of the cornea, diametrically opposite where it entered, and that the knife may divide the whole of the lower semi-circumference of the *cornea* parallel to the edge of *that* tunic, and as near as possible to the sclerotic. When, in order to complete the incision, a line, or only a line and a half of the cornea remains to be cut, the assistant should let the eye-lid drop gently on the cornea. The operator then finishes the incision by withdrawing the instrument a little further, and taking it out of the eye, which is immediately covered by the eye-lids, which operator and assistant set wholly free. Having allowed the patient to rest awhile, the assistant again raises the upper lid—the operator depressing the lower one, but without pressing or so much as touching the eye-ball. The surgeon then takes the Cataract needle, and enters the blade under the edge of the cornea. Having brought it opposite the pupil, he draws back the needle until the point is at the entrance of this open-

The *modus operandi:*

ing, and into which he passes it, and presses it upward, till it is behind the iris towards the upper part of the crystalline capsule: then by turning the sharp edge of the needle to the crystalline, and raising the handle, he makes a vertical incision in the capsule of the lens. The instrument is now withdrawn by the shortest route—taking care not to disturb the iris: the assistant and surgeon immediately loosing the eyelids. The lens is generally forced towards the pupil by a contraction of the muscles of the eye, which are irritated by the incision of the capsule.

Escape of the crystalline: how favored.

If the contraction is strong, and the pupil sufficiently dilated, the crystalline bursts through this opening, and falls upon the patient's cheek. This spontaneous discharge is favoured by turning the patient from the light, and persuading him to make some movement of the eyes, say by turning them upwards. Should these means be insufficient, gentle pressure may be applied to the lower part of the eye-ball. This pressure is easiest brought to bear by gently pushing the lower eyelid into the socket.

Ulterior measures.

After the crystalline is discharged, the pressure should cease, and the patient may have momentary rest. The operator should now open the eyelids to examine if the pupil be perfectly clear. Should any opaque portions of the capsule, or soft parts of the crystalline (accompaniments of Cataract) remain within the eye, they are to be removed by gently pressing the cornea from top to bottom, with the scoop (DAVIEL's), or by introducing that instrument or the nippers within the eye to extract

the *debris*. If the dark edges of the capsule are perceived, they should be seized with the hook, or forceps, and withdrawn. Whatever instruments are in requisition should be inserted in such a manner as least to irritate the eye. Their employment is always preferable to the injection of warm water, to which FORLENZE resorted, to *wash out* the particles.

Instruments superior to the use of fluid injection.

So soon as the pupil is clear, ascertain if the edges of the cornea meet properly. Allow the eyelid to fall, and give the patient another moment's breath. Next, to be assured whether the party sees or not, open the eye with care, and shew something which does not shine. As the chief end of this test is to calm the patient, and enable him more patiently to bear the occlusion of the eyes, it should not be prolonged. The lids being shut and wiped with fine linen, a glutinous bandage should be applied to the lower eyelid and drawn so tight that a separation of a couple of lines is produced between the two. That accomplished, fasten the bandage to the cheek and lower jaw. By so doing, the edge of the lower eyelid is prevented getting between the lips of the wound in the cornea, which would set up inflammation, with, perhaps, loss of the eye. [a]

Additional suggestions:

To hinder the patient from opening the eye too soon, close it with a bandage of gummed *taffeta*, glued over

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[a] Adhesive plaster of a mild kind, is the best bandage where this *manœuvre* is thought advisable to be acted on. In my own practice I dispense with every unnecessary proceeding: holding as I do, that simplicity, both as to ways and means, is the test of good surgery.—H. N.

both eyelids. In front of, and over the eye, place a small compress, and secure it to the forehead by means of a cap. The patient may now be put to bed, with instructions to repose upon the back, and the strictest quiet to be observed. [a]

Recapitulation.

So much for the operation of "*lower extraction,*" with the description of which it will not be useless to recapitulate *seriatim* each successive stage, so as to examine the precautions which should be taken by those who would operate skilfully; and also to mention obstacles occasionally encountered, with casualties which may supervene.

Point in the First Stage.

1*st Stage :—incision of the Cornea.* It sometimes happens that as soon as the cornea is punctured, it flies from the instrument and becomes buried in the inner angle of the socket.[b] Don't withdraw the instru-

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[a] So far as BANDAGES, &c., are concerned in after-treatment, excellent directions are given in modern books. But gummed "taffeta" or glue plaster in any shape, has my decided objection. At any moment it may be requisite to inspect appearances within the lids, and to remove a gummed plaster is no joke to the patient, nor much of a sinecure to the operator. The less done to irritate the patient, the better; and sticking or gummed adhesives, must be prohibited. A pledget of four folds of soft linen, fixed to a bandage, and nicely applied, is a sufficient defence. And should the bandage shift, a supporting strip across the head will suffice. Above all, keep your patients comfortable, and let them feel as little irksome *restraint* as possible.—H. N.

[b] The nice arrangement of surgeon and assistant should fix the eye. The surgeon's own finger placed towards the inner caruncle will keep the eye from turning inwards:—practice will give him a ready hand.—H. N.

ment: on the contrary, under the guidance of a gentle hand, let it follow the movement of the eye. Continue the incision as far as necessary; then, while part of the cornea is concealed, wait till the eye has regained its original position, and then complete the incision to the extent required. But sometimes the cornea remains partly hidden, or after reappearing becomes again concealed. In such predicaments, a skilful operator *continues* the incision. Under the pilotage of an accurate knowledge of the relations and dimensions of the different parts of the EYE, he brings out the point of the knife at the hidden portion of the cornea. To strike and pierce the cornea, at the most convenient point *when thus buried*, require the nicest skill. But when accomplished, you are master of the eye-ball; and by merely turning the handle of the instrument towards the temple, the cornea is drawn obediently forward by the blade. This movement needs no violence, and should be made very gently.

How to strike the proper part of the cornea, and gain the mastery of the eye-ball.

Puncturing the cornea is the most difficult and important part of the operation. The instrument must be entered perpendicularly to the cornea. If done obliquely, the point gets entangled in the *lamellæ*. Besides, the lips of the wound will be too oblique, and so unduly large as not only to contract the opening, but most probably cause a scar detrimental to the sight. The dull colour of the instrument's point will shew when it is involved amongst the layers of the cornea, and that it has not penetrated the anterior chamber. To give it a more accurate course, draw it back a little. The handle should be directed towards the temple to avoid injury of the iris. Should the point be caught, disengage the instru-

How the instrument should be entered:

Avoid injury to the iris, and effusion of the aqueous humor.

ment by drawing it back with judgment, and return it quickly forward, to obviate effusion of the aqueous humor.

Size of the incision to be regulated:

Half the circumference of the cornea should be comprised in the incision. When the cornea is punctured either above or below its transverse diameter, an oblique direction should be given to the knife so that the wound may include half the cornea. In rare cases, where the incision has been too large, the cornea has gangrened owing to a deficiency of nutrient vessels. Again, where too small, the crystalline can only be discharged by tearing and disturbing the parts; followed of course by inflammation of the eye-ball. In the latter case—I mean when the incision is insufficiently large—it must be extended on the outer side by means of the carved scissors, before going on to the second stage of the operation. The scissors should be introduced so as to turn the convexity of the blade to the outer angle of the eye, thereby avoiding injury to the iris, or making too small an incision.

Evils of too small an incision:

Practical suggestions:

When incising the cornea, if it be perceived that the point of the knife would leave the anterior chamber too much on either side of that part of the cornea which it should penetrate, the instrument must be drawn back, a little, and then carried rapidly forward in a preferable direction. However, the incision may be continued without injury, although it divide the eye at the union of the cornea with the sclerotic, or even at the edge of the latter membrane. But when the point has penetrated far into the sclerotic, it cannot be continued in that direction without endangering the iris.

Valuable precautions:

It is an important precaution, the instant after you have punctured the cornea, to give the knife such a direction that it has but to be pushed right onward, to bring the point to the most convenient spot opposite the cornea. A neglect of this precaution makes it essential during the operation to wriggle the blade different ways, to find the proper spot;—thus occasioning effusion of the aqueous humor, which, in an adroitly performed operation, ought not to emerge till the incision of the cornea is finished. It was for that very reason that Beer so constructed his knife, that it acts as a plug to the wound whilst the incision is being formed. If before the incision is completed, the aqueous humor by any cause is discharged, the iris immediately touches the blade of the knife and the internal side of the cornea. Hence, by continuing to cut the coat of the cornea, a part of the iris would be wounded. Under such circumstances, when the point of the knife has not reached the internal part of the cornea, slight lateral movements may be given to its edge, and an attempt made to advance it without injury to the iris. Where this method does not succeed, that portion of the cornea to be penetrated may be gently rubbed with the middle finger of the hand which holds the lower eye-lid. Generally, the iris then slightly contracts, and shrinking from the cornea, it allows the instrument to proceed. The same mode is adopted should the iris approach the blade of the knife after a considerable part of the incision is perfected. Besides, even when a small part of the iris is pierced, the operation will not the less succeed. Clean incisions of this membrane are seldom followed by bad consequences.

Epitome of Second Stage.

The *Second Stage* of the operation consists in the incision of the crystalline capsule. This may be performed as perfectly with the Cataract needle, as through the medium of the most complicated instruments termed "cystitomes."

It has been proposed to make several incisions in different places. One is enough, if care be taken to make it sufficiently roomy. Should several be made, the parts are more irritated, and the instruments are engaged longer in the eye.

Sometimes the iris adheres by filaments to the crystalline capsule. Before incising the capsule, these are to be separated by moving the needle, up and down, between it and the iris.

Third Stage.

Third Stage. After incising the capsule, if the crystalline neither discharges itself spontaneously, nor by pressure, it is referable to contraction of the pupil, or to the small extent of the incision. In the first instance, the eye should be kept shut for some time, and the room, dark, to *dilate* the pupil. In the second, the needle requires to be introduced again, and a fresh incision made in the capsule. Even then, the crystalline may not present itself: a hook becomes necessary, and should be inserted, whereby it is to be abstracted.

A similar method is followed when part of the vitreous humor leaves the eye, before the crystalline. This is usually owing to pressure acting on the anterior of the sclerotic, which, instead of forcing out the crystalline,

(as would be the case if used further back,) on the contrary squeezes it into the interior of the eye, or actually causes its disappearance, and makes its extraction impracticable. The result is, a violent inflammation of the eye, destructive of vision.

Atmospheric air sometimes enters the anterior chamber during the insertion of the needle. If small in quantity, it may be left for absorption: whereas, if excessive, its expulsion may be effected by passing DAVIEL's scoop lightly over the cornea. Air in the eye

An occurrence which frequently follows discharge of the crystalline, is the efflux of part of the vitreous body. When this is inconsiderable, the operation will still succeed. But if beyond a third of this body, the sight is often compromised. The discharge in question, is produced by contraction of the muscles of the eye: there can be no doubt of this. As soon as it commences, the eye-lids should be shut with a bandage; at the same time having recourse to energetic antiphlogistic measures. What is the sequel? That part of the vitreous body enclosed by the wound in the cornea, separates itself, and the wound cicatrises. There only then remains a deformed pupil caused by pressure of the vitreous body. Partial escape of the vitreous body:

The iris, at times, gets between the lips of the wound; but its return is obtainable by directing the patient to repose with the eyes closed, and then abruptly opening the lids. *The agency of light causes the iris to contract.* Management of the iris.

This result is favoured by friction of the eye-lid during

its occlusion, by means of the end of the finger. Suppose this does not succeed, the iris may be gently returned with DAVIEL'S scoop. As for after treatment, it is similar to what is appropriate for *Procidentia Iritis.*

Nervous symptoms may intrude themselves during the operation; such as fainting, spasms, wind, hysteria, &c. ÆTHER, with chamomile and opium—and in addition putting the patient to bed; (or in a recumbent posture;) after which the prosecution of the operation may be recommenced on the cessation of the interruptions named. [a]

Æther; and CHLOROFORM

[a] ÆTHER. How times have changed—in operative Surgery—and we *with them!* The vicissitudes of the season in a climate so remarkable for "change" as ours is, form a standing topic of remark, as much to this hour as when the imperial conqueror, and equally remarkable scholar and commentator, JULIUS CÆSAR, took possession of France and partially invaded Great Britain. So graphically did he describe the climate of adjacent Gaul and British counties which he actually observed, that they remain on record as great facts for the compelled echo of present times. Climate has a close relation to temperament, and wonderfully modifies the effects of remedial measures, as well as the course of disease. But the whole face of operative surgery throughout the inhabited globe, may now be said to be revolutionized into similarity, by the discovery (proclaimed in 1847) of the use of *Æther* and "*Chloroform,*" when properly inhaled in the form of vapour, by patients immediately before they are operated upon. Truly, the remarkable saying of one of the greatest of the poets of old Rome, never was more descriptive of the *transition-stage* in respect of the MORALS and PUBLIC OPINION of *his* age, than his phrase is happily expressive of the *transition-era* in the SURGERY and MEDICINE of the present day. Stœber, in the text, has alluded to the administration of ÆTHER; but it is by the gullet, or *old Roman road* of SWALLOWING, and thereby brought into action through the medium of a labouring stomach reacting in a tedious, uncertain, and most roundabout way, on the Brain, Respiratory Nerves, and Spinal System. As

During the first twenty-four hours, warm tears mingled perhaps with aqueous humor, flow from the eye-lids. At the expiration of that period the lips of the wound become generally agglutinated. By the fifth or sixth day, the cicatrix is formed, but it does not acquire solidity till the fifteenth or twentieth. Progress of cure.

After the sixth day, the agglutinative bandage which depresses the lower eye-lid may be removed. On the tenth, the gummed taffetas which kept the eye closed, may be taken away—still leaving the compress which shades the eye. The darkened room and the corresponding state of the patient's bed, (the curtains should have been kept closed since the operation,) may be diminished by the gradual admission of light, day after day. Towards the fourteenth, when inflammation and the sensi- Points for guidance as to removal of bandages: Gradual admission of light.

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regards the new dispensation of Chloroform or Æther-vapour, administered by the lungs, every surgeon on earth has reason to exclaim with the telegraphic poet,

Tempora mutantur, et nos mutamur in illis.

The necessity, or rather pretext, for drugging timid patients with brandy or laudanum, no longer exists. Patients now can *breathe* themselves into a condition wherein PAIN is not felt, and in which they literally "lap their senses in oblivion." The will of the otherwise most stubborn and thwarting, is put in abeyance, and becomes in the completest sense, the most "obedient and very humble servant" to that of the operator! The fault moreover is no longer the patient's — but *ours* — if the operation is baulked. The effects of this invaluable agent, with the mode of administering it, are so interesting to every philanthropist, that I propose to recur to the subject more fully than is convenient in a note. Accordingly, in the concluding part of this treatise, I shall have more to say, on Æther, especially as I claim to myself some of the general credit as a pioneer to the discovery;—a discovery which, though not begun, was brought to a state short only of perfection in America, by a dentist of that country.—H. N.

Management of the scar:

bility of the eye have disappeared, the cicatrix may be rendered clear and small by touching it with laudanum, and subsequently using a weak solution of PIERRE DIVINE. [a]

And of the lids

The eye-lids should be carefully cleansed every day, to remove the secretions of the wound and of the Meibomian Glands.

Precautions: with practice.

Sometimes, violent inflammation demanding antiphlogistic treatment, follows the operation. To prevent this, it is advantageous—if the patient be not too feeble—to bleed him immediately after the operation, and to apply cold fomentations to the eye, throughout the first two days. Occasionally, the superficial part of the cicatrix re-opens, attended by rupture of the cornea: at other times the wound completely re-opens, when it should be touched lightly with laudanum, and agglutinative bandages put on as at first.

When the wound does not heal:

The wound may not cicatrize at all. This happens either from a want of sufficient vitality in rare cases, or from the edge of the lower lid getting between the lips of the wound. In the first set of cases, touch the wound with laudanum. [b] In the second set, the edges of the

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[a] Pierre Divine *(lapis divinus)* "On appelle ainsi une substance dont Saint-Yves indique ainsi la preparation:

℞ Vitriol. de Cypro,
Nitri,
Aluminis āā.... lb j
Cont. et pulv. in vase vitreo. cal. arenæ liquefactis, adde Camphor. trit. ʒij
Mixt. et refrigerat. massam serva.
S. "*Lapis Divinus.*"

[b] Laudanum, being a spirituous solution, is an irritating application under any circumstances to the

wound swell and whiten; the eye-ball becomes inflamed and suppurates, and finally is reduced to a small crumb. The only means to employ are, removal of the causes, coupled with antiphlogistic treatment.

Wenzel and Jægers manner of operating.

In addition to EXTRACTION of the Cataract which I have described, there are two other modes practised by a great number of operators. The methods in question differ from the first, principally in the direction of the incision of the cornea. The modes are, that of WENZEL, and that revived by F. JÆGER, of Vienna, for which the latter professor invented a particular knife.

Clinical remarks:

WENZEL'S process differs from that described by me, in this: the incision of the cornea is made obliquely from top to bottom, and outside to inside, so that the division of the cornea is formed by the lower external part of this membrane: and also, because WENZEL combines the first two stages of the operation, and incises the crystalline-capsule at the same time he cuts the cornea. [a] As to the direction of the incision, this process offers no advantage over that by the lower incision, as it frequently occasions an efflux of the vitreous humor which the oblique direction of the incision is intended to prevent. The more rapid cicatrization,

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surface of the conjunctiva, and a very wrong one when a wound has been inflicted. The "wine of opium" is safer; but a point of sulphate of copper—or its solution upon a camel-hair pencil, and dexterously applied, is more surgical, less irritating, and a more common-sense sort of application under the circumstances calling for this note.—H. N.

[a] M. J. B. de WENZEL, Traité de la Cataracte. Paris, 1786.

hoped to be attained, is equally well promoted by a lower incision, provided care be taken to obviate the introduction of the edge of the lid within the wound. The operation also presents greater difficulty on account of the projecting edge of the orbit, which may be such as to render the incision impracticable. With reference to blending the first two stages of the operation, it offers numerous disadvantages which should dictate its rejection. By introducing the point of the knife into the pupil to open the crystalline-capsule before the section of the cornea is completed, this last membrane is disturbed—issue is given to the aqueous humor—and it becomes matter of difficulty to terminate the operation without damage to the iris.

Upper Keratomy as performed by SANTARELLI

The second process *(upper Keratomy)* was first performed by SANTARELLI. [a] Professor JÆGER revived and brought it to perfection. [b]

In what it consists:

The operation consists in cutting the upper semi-circumference of the cornea, and is performed precisely like that which I have described—with this difference: the blade of the knife is turned upwards to form an incision in the upper part of the cornea, which is as easily

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[a] G. G. SANTARELLI, Ricerche per facilitare il cateterismo e la estrazione della cateratta. Vienna, 1795.

[b] GRÆFFE und WALTHERS Journal der Chirurgie, &c., 1827. Tom. ix. p. 547; et J. N. SEELIGER. Uebersicht! der verschiedenen Staarausziehungs—Methoden, nebst praktischeno. Belegen, &c. Wien, 1828.

made by means of an ordinary cératome as by the double blade invented by JÆGER.[a]

This method has the advantage of less easily allowing an escape of the vitreous humor, and of favouring a cicatrix which is concealed by the upper eye-lid; whereas, the scar consequent on incising the lower portion of the cornea, is perceptible. But then it has its disadvantages: it is much more difficult of performance without injury to the surrounding parts, especially the upper eye-lid: it also tends to retain within the eye blood effused during the operation. Thirdly, it renders it painful, or even impossible for the eye to undergo the movements sometimes necessary, in order to dilate the wound for the extraction of crystalline particles, or of the eclipsing capsule, &c. It may be resorted to, however, first, where it is requisite to operate by EXTRACTION on very *prominent eyes*, which are thereby subject to escape of the vitreous humor. Secondly, when the upper lid of the eye on which EXTRACTION is to be performed, is liable to relaxation; and where for such reason, obscuring the lower part of the cornea is to be avoided.

Review of *pros* and *cons*

Cases in which it may be had recourse to.

A mode of which I need not speak is that of BEER.[b] It consists in *extracting the lens with its capsule*—an

BEER'S operation.

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[a] This is the fashionable Metropolitan operation; on which, however, I merely note in passing, that it is considered in the third part —my SUMMARY—of this treatise. H. N.

[b] G. J. BEER, *Methode den grauen Staar sammt der Kapsel auszuziehen. Wien*, 1799.

operation which has never found many adherents, and which I do not believe is practised at the present day. In conclusion, I shall say nothing of the endless modifications the cataract-knife has undergone, nor of the instruments which should complete the incision of the cornea—at a stroke! All these points (which may well be dispensed with) will be found in the following works:

Pfotenhauer. *Dissert. cultrorum ceratotomorum et cysto-tomorum ad extrahendam Cataractam historia.*—Viteb., 1805.

H. Lachmann. *Instrument. ad Corneæ sectionem in Cataractæ extrah. perf. invent. descrip. historica.*—Gott., 1821.

THE OPERATION FOR

CATARACT BY DEPRESSION.

Depression of the Cataract:—what and how.

Operating for Cataract by DEPRESSION, consists in *leaving the opaque body in the eye*, but placing it *out of the axis of vision by burying it in the vitreous humor*.

From the time of CELSUS till now, this method has received many modifications, chiefly as to instruments—the situation given to the crystalline—and the part of the eye to be penetrated. [a]

Division into "true" or real depression, and *reclination*.

With reference to the situation to be imparted to the crystalline, operating by depression is divided into *true depression*, and "subversion" or *reclination*.

Description:

In the first, the crystalline is pushed direct from top to bottom into the vitreous body. On the contrary, in the second, which was originally [b] proposed by WILLBURG, [c] it is forced from front to back, and from inside to outside. Some operators, by amalgamating these

Amalgamated form:

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[a] CELSUS. Lib. vii. cap. 7.

[b] The Egyptians performed the operation of Reclination for the cure of Cataract some thousand years before "Willburg" was born.—H. N.

[c] WILLBURG. Betrachtungen Operationen des Staares. Nurnberg, 1785.

proceedings, have formed a third, called "*depressio-reclinatio.*" The instrument with which the Cataract is depressed may be introduced by the sclerotic, or by the cornea, which has severally given rise to the terms depression by *scleroticonyxis*, and that by *keratonyxis.* Of these measures something will be said in the sequel.

Advantages, and disadvantages, of the operation by DEPRESSION

DEPRESSION causes less disturbance to the eye than EXTRACTION, and consequently renders the patient less irritable after the operation. It may be performed on eyes too restless for extraction, or when adhesion between the crystalline capsule and the iris, is not extensive. Thirdly, it is more easily performed than extraction. But on the other hand, it has the disadvantage of exposing the patient to relapse, as the crystalline may return to its original situation, which depends upon the density of the vitreous body, and the movements (more or less strong) which patients make, after the operation. DEPRESSION has also the disadvantage of being less conducive to a thorough establishment of sight.

Recommendatory features enumerated, *seriatim:*

DEPRESSION is recommended for young people, where the depressed crystalline will be absorbed:

Secondly, for old decrepits, where it is feared the wound of the cornea made by EXTRACTION would want sufficient vitality to cicatrize:

Thirdly,—Where the Cataract is of a medium consistence:

Fourthly,—Where the disease is hard, in which case extraction is not indicated; for instance, when the eye is very irritable and moveable, and the anterior chamber too narrow.

Fifthly,—Where the cornea is diseased.

Sixthly—When the party cannot command proper superintendence after the operation.

Lastly,—DEPRESSION is chiefly advisable, when partial adhesions exist, between the capsule and the iris.

Per Contra:

To reverse the picture, DEPRESSION is under ban, when Cataract is soft:

Secondly—When it is hard and may be *extracted.*

Thirdly—When the patient cannot remain in bed after the operation, or if affected with a lingering *cough*, the paroxysms and shocks of which would speedily cause the Cataract to re-ascend.

Cataract needles:

When operating by DEPRESSION, a cataract-*needle* is used. This instrument has undergone various shapes which are far less essential than the propounders of the respective modifications seem to imagine.

Cataract-needles for DEPRESSION, are either straight or curved. The latter deserve preference, because, with a curved needle it is easier to avoid injury to the iris, or of running the point of the instrument tilt into the crystalline capsule, at the very outset of the operation.

Remarks on the needles used by Schmidt, Dupuytren, and Scarpa.

The most handy needles, and those in the greatest request, are Schmidt's and Dupuytren's which end in a curved blade—one face of which is concave, the other convex; and Scarpa's needle, the convexity of which is flat, with the concavity divided into two grooves by a longitudinal ridge.

In depressing the Cataract, the operator should hold

The operation —its niceties and successive steps.

the needle as was directed at page (34) for the Cataract knife, turning the bulging ex-part upwards. Bring the point as near as possible to the place to be penetrated, and when the eye is tranquil plunge in the instrument. The operation is thus performed in three stages:

The stages, and clinical epitome of the operation:

1st, —By insertion of the needle;
2nd,—By depression of the Cataract;
3rd, —By withdrawal of the instrument.

The needle is introduced through the sclerotic at a line and a half from the transverse diameter of the eye, and from one and a half to a couple of lines distance from the edge of the cornea. This spot is selected to avoid injury to the long *ciliary artery* which goes horizontally on a level with the transverse diameter of the eye; and also to avoid the ciliary *ligament* which extends from the edge of the cornea behind the sclerotic, to the distance of a line or a line and half. The instrument's point should be directed to the centre of the eye, and be advanced perpendicularly into the sclerotic. When the curved extremity has fairly penetrated, raise the handle of the needle and give it a turn of ninety degrees on its own axis, so as to bring the convex part of the instrument to the posterior aspect of the iris—the concavity being towards the crystalline. Next carry the instrument through the posterior chamber until you have the point behind the pupil; the hollow part of the needle should then be applied to the anterior aspect of the Cataract, so that the point is to the upper and inner portion of this aspect. *Then*, by gently raising the handle, the operator will discover whether or not there are adhesions, inasmuch as this movement disturbs the

Cataract and pushes it somewhat backwards, which occasions quiverings in the iris when *it* adheres to the crystalline capsule. Should the operator detect adhesions he must cut them with the blade of the needle, drawing the instrument back, so as to bring its edge into action. He must again apply the concavity to the anterior aspect of the Cataract, and by elevating the handle in the direction of the root of the nose, he has next to force the Cataract into the lower external part of the vitreous body.

But prior to losing sight of the opaque body, the operator should twirl the instrument in his fingers, so as to bear on the convex part of the crystalline, and thus finish the depression. For want of that necessary precaution the point of the needle might pierce the crystalline, from which it would be difficult to disengage it without causing ascent of the opaque body; or failing that, it would wound the retina and occasion serious accidents. *In every movement made with the needle, it should act as a lever of the first order, having its fulcrum in the opening of the sclerotic, so as to avoid disturbing that membrane.*

Standing maxim in the needle operation.

Having kept the crystalline depressed for some moments, and allowed the vitreous body to re-occupy the channel made in it by the crystalline, the operator should gently withdraw the needle in a direct line backward, giving it a rotatory motion. Then when he considers the instrument to be disengaged from the depressed body, he brings the point into the pupil, to see that it is clear and that no obscuring particle of the capsule

remains. In the event of any thing of this kind being perceived, it must be seized by the needle and buried in the vitreous humor. When the pupil is clear, the instrument is drawn from the eye in the same direction as that by which it was inserted—first turning the convex part towards the iris, and then upwards. The operation being completed, the eye-lids are closed by a bandage of gummed taffeta, and the eye protected by a compress attached to the forehead. Before the sixth day, no premature attempt should be made to ascertain whether the patient has recovered the sense of sight. [a]

Concluding precautions.

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[a] Whereas I caution the surgeon never, in the first six days after the operation, to let twelve hours pass without inspecting the *conjunctiva*, by gently drawing down the lower lid. Very often I have saved my patient's eye by such a peep, when inflammation has been going on, and no announcement of it made by pain—but having seen it, of course I checked its progress.—H. N.

THE

OPERATION BY RECLINATION.

The process now to be gone into, has been designated subversion by *sclerotonyxis;* ("reclination;") because by means of a needle inserted through the sclerotic, the crystalline is so subverted as to place the upper edge behind, and the lower in front, when the anterior aspect becomes superior, and the posterior inferior. The lens thus overset, dissolves, and if of slight consistence, is absorbed; but if dense, it persists unchanged, or diminishes very little.

The removal of Cataract by RECLINATION.

During and after operation, different casualties may supervene. For instance, as soon as the sclerotic is pierced, the eye may fly so quickly to the outer angle of the orbit, as to become disengaged from the needle. The operation must be recommenced by trying to penetrate at the puncture already made. [a]

Liable to sundry accidents:

Sometimes on entering the point of the needle it pierces the iris or the crystalline. When this is perceived, the

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[a] Here again there is much matter in the text of STŒBER provocative of criticism. But see my running comment, as a practical man, in Part 3—my SUMMARY.—H. N.

instrument must be drawn a little back, to disengage it. To avoid such an accident, the convex part of the needle is turned towards the iris, against which it is even applied, to keep the point away from the crystalline.

In piercing the sclerotic and the choroid, the instrument may cut a ciliary vessel: the flow of blood immediately colours the aqueous humor. When discoloration from this cause is so great as to prevent the instrument being seen, through the pupil, the needle must be taken out and the operation postponed to another day, unless by great experience the operator has acquired sufficient skill to finish the operation without seeing the instrument.

Sometimes the crystalline does not remain at the bottom of the eye, but returns to its place as soon as the needle ceases to detain it. The operator again depresses it, and if still without success, he attacks the crystalline by incising it with the blade of the needle—the object being to leave it to the dissolving property of the aqueous humor, and to subsequent absorption. When this occurs, it is known in three or four weeks by a diminution of the bulk of the crystalline: when it does not take place, extraction is performed. This last method must be resorted to, when, during depression, the crystalline ascends before the needle—crosses the pupil—and becomes lodged in the anterior chamber, where it compresses the iris, and would inflame that membrane if suffered to remain. [a]

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[a] See Summary, Part Third.—H. N.

The iris may be wounded during the operation, and subsequently inflame. But a more frequent inflammation is that of the sclerotic, which generally ensues when that tunic has been fretted during the proceedings.—It should be treated as for inflammation of the sclerotic; and the patient for some days should be submitted to a vesicatory, to prevent relapses of this inflammation, which are very frequent.

Compression of the retina, from undue depression: bad effects.

A formidable accident which follows depression, is *compression of the retina*, owing to the crystalline being *too far* depressed. Inflammation of the retina and *amaurosis* may ensue: the patient has violent pains in the eye—sees flashes of fire—suffers nausea and vomiting: the sight is weak, or in abeyance, although the pupil is clear. This state of things is to be combated by energetic antiphlogistic treatment; and in general, unless the compression is very great, the symptoms diminish as the crystalline loses its size by absorption.

Treatment.

Other modes by different operators.

The process for depression above described, is not the only one followed by operators. The crystalline can be *reclinated* by inserting the needle through the cornea, which technically, is reclination "by *Keratonyxis.*" In this, the needle is introduced through the cornea at the distance of half a line from the centre of the membrane, and the convex part of the instrument is applied to the upper part of the anterior aspect of the Cataract. Then the crystalline is overturned from the front backwards, and from the top downwards. There are operators who prefer this method, because the needle traverses fewer parts than in that by the sclerotic;

Reclination by *Keratonyxis*:—What.

and also because the instrument is not lost sight of. Notwithstanding, it is less satisfactory, because the cornea is easily fretted—especially when the eye is restless, which occasions inflammation, suppuration, and dimness of the membrane. The iris too, is oftener wounded, when attempting to seize the obscure particles of the crystalline capsule: also, because it is impossible, or at least very difficult, to cut adhesions which may exist between the iris and the crystalline capsule. In other respects the wound of the sclerotic—of the choroid —and of the retina—which are made in the operation "by the sclerotic," are immaterial, unless when fretted.

Direct depression:—what?

A proceeding which differs little from that described in the first instance, is *direct* depression *(depressio.)* [a]

In performing it, the needle is inserted through the sclerotic a little above the transverse diameter of the eye, and the concave part is brought upon the upper portion of the crystalline; afterwards, the lens is plunged from the top directly to the bottom, into the vitreous humor. By this manœuvre the crystalline capsule is easier removed than by reclination outward and downwards. But the advantage is more than counter-balanced: first, by the difficulty of direct depression, owing to the needle being kept with difficulty on the edge of the crystalline, as it often slips upon the anterior or posterior aspect, and sometimes pushes the lens across the pupil into the anterior chamber. Secondly, by the facility

Clinical remarks:

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[a] See SUMMARY.—H. N.

with which the crystalline, after direct depression, returns to its place.

Proposed amalgamation

An attempt has been made to combine the advantages of *direct depression*, and of depression *outwards and downwards*, by proposing first of all, direct depression, in order to remove the capsule; then before completely burying the crystalline, to apply the needle to its anterior surface, and so capsize it backwards. This operation however, which has been named by the compound term *depressio-reclinatio*, gives rise to too great a lesion of the vitreous body. And in addition, the tearing away of the capsule, performed in the way described, is generally sufficient; and in the event of any opaque shreds being observed, they can easily be removed.

Stœber's summary :— condemnation of *hyalonyxis*

I shall not speak of the defective proceeding of Bowen called *hyalonyxis*, which consists in depression, by introducing the needle from behind to the front, by the sclerotic—the vitreous humor—the posterior coat of the crystalline capsule—the lens, and lastly by the anterior wall of the capsule. [a]

The cutting or "breaking-up" operation —what ?

Discissio—" Broiement." The object of this method is to remove the Cataract by exposing the crystalline to the dissolving action of the aqueous humor, and to absorption; also at the same time to cause the disappearance of the capsule, when obscured. To attain this, the crystalline capsule is incised in different places

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[a] D. Bowen, Practical Observations on the removal of every Species and Variety of Cataract by *Hyalonixis*. London, 1824.

whereupon the pieces pass behind the iris. The lens is cut up into parts, the hardest of which is depressed into the vitreous body, while another is introduced into the outer chamber so as to place all the fragments in the closest possible contact with the dissolving humors.

Disintegration:

Discissio, or "broicment" (French) has the advantage of causing less irritation to the eye—of radically curing the patient in the event of absorption going on —and finally of requiring much less care in the after management, than the other operations. But at the same time it presents great disadvantages. First, it often happens that the crystalline is not absorbed: consequently the Cataract remains. Among the old this may easily take place, as the crystalline is hard, and the disposition to absorption is inactive. Again, even when absorption does proceed, it is incomplete, and the patient does not enjoy sight for weeks or months. Finally, inflammation of the iris is occasionally set up by the swelling and consequent pressure of the crystalline fragments, when plunged into the aqueous humor.

In what cases recommended:

Discissio is recommended for soft or milky Cataract; for infants or young persons; for eyes too irritable, or too moveable to admit of any other operation: for individuals affected with lingering cough, or who cannot keep quiet, or receive adequate nursing after the operation. *Discissio* is precluded where the Cataract is hard, and the sufferer is advanced in years; because then, absorption would not easily take place. It does not succeed well when the crystalline capsule is much deteriorated and swelled:—the pieces do not sink sufficiently

and continue to return towards the pupil, and thereby perplex the sight. Lastly, when the capsule adheres to the iris, *discissio* easily occasions inflammation of the latter, with occlusion of the pupil by lymphatic exsudation.

How performed:

Disruption by *discissio*, is performed by means of a cataract-needle, introduced either by the sclerotic or by the cornea.

Potts' way.

Dispersion by the sclerotic *(scleroticonyxis,)* as a particular method, was first performed by POTT. [a] A curved needle is employed. It is inserted into the eye as if for reclination of the lens. Insertion is the first stage of the business. In the second, the capsule and the lens are incised. To effect which, when the point of the needle has reached the upper part of the capsule, the blade is turned towards that membrane. By raising the handle and gently drawing the instrument forward, to make the edge act, the crystalline capsule is rent from top to bottom. Having then brought the instrument into the pupil, to be sure that it is not entangled in the capsule, to make a new incision in this, the needle is carried towards the inner angle and a transverse cut is made, and as a finisher an oblique one. The capsule being divided, the operator does the same to the LENS. When the last body presents a firmer kernel than the rest, it is depressed into the vitreous humour, which constitutes the third stage.

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[a] P. POTT, Chirurgical Works. London, 1775; vol. ii.

4th stage: The fourth stage is performed by foisting one or more fragments into the anterior chamber. This is managed by moving the needle from behind forward, in such a way as not to fret the sclerotic, nor wound the iris. Lastly: in the fifth stage the needle is drawn from the eye, in the same direction as that by which it entered.

Broiement. *Broiement* by the cornea (by *Keratonyxis)* is an operation which dates only from the beginning of the present century. It was first proposed by Reil and Buckhorn, [a] and afterwards it was practised and perfected by Langenbeck. [b]

Disintegration. This process is better performed with a straight needle, because such an instrument penetrates the cornea with greater facility than a curved one The latter, however, may be used, and on inserting it, the concavity is turned upwards. The needle is thrust into the cornea a demi-line below the centre of the membrane, so that the small cicatrix which results from the wound may not be situated in front of the pupil, and thereby molest vision.

Having brought the point of the needle to the upper part of the capsule, an incision is made by elevating the handle of the instrument, and drawing it a little back. Then two cuts are made, which on dividing the inner and

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[a] W. H. J. Buckhorn. Diss. de Keratonyxide, Halæ, 1806; et ejusd. de Keratonyxide nova Cataractæ aliisque oculi morbis medendi methodo. Magdeburg, 1810.

[b] K. J. M. Langenbeck.—Prufung der Keratonyxis einer neuen Methode den grauen Staar durch die Hornhaut zu recliniren oder zu zerstückeln nebst erl operationsgesch. Gottingen, 1811.

outer edges, join them in the middle, and form a cross. After dividing the crystalline in the same manner, and having depressed a fragment of this body, an attempt is made to fix another on the point of the needle; and so by drawing back the instrument to manœuvre it into the anterior chamber.

As was observed of other modes, so of these. Each has its *pros* and *cons*. In disruption by the sclerotic, it is easier to depress a fragment of the lens, and to foist another into the anterior chamber. This process may likewise be performed on very restless eyes, which tend to hide a portion of the cornea in the inner and upper part of the orbit. The favourable, and unfavourable:

Discissio "by the cornea," on the other hand, offers the great advantage of rendering the section of different parts of the capsule and crystalline more easy, which in the other process is always incompletely performed towards the outer angle. The section instanced, being the principal act, because it is what most contributes to the success of the operation—"discissio," should therefore be performed by the cornea, except in cases where the latter membrane is diseased or disposed to inflammation, and in those where the extreme restlessness of the eyes renders the proceeding impracticable, or at least would occasion a fretting of the cornea which might bring on inflammation—suppuration—and opacity of that membrane. Considerations:

After undergoing the operation of disruption, the patient should be treated as after DEPRESSION, but without being submitted to so absolute a seclusion. After-treatment:

Reserved considerations:

If the party operated on, is young and vigorous, the absorption of the crystalline occasionally takes place in eight days. But such are very rare cases. Generally, the absorption of the crystalline is incomplete till the end of three or four weeks, or even longer: nay, it may not take place at all; and even when it does, the capsule remains partly in the pupil and impedes vision.

In this last predicament, recourse must be had to depression, or to extraction of the obscuring portion of the capsule. When the crystalline is not absorbed, DISCISSION must be repeated, and an attempt made to "cut in" more artistically than at first.

If the crystalline wriggles from the needle, and enters the anterior chamber, its extraction becomes imperative.

After operation for the removal of Cataract, it may be that a portion of the crystalline capsule remains in the eye, causing dimness and the after-growth of Cataract—known technically as secondary or consecutive Cataract. It is usually formed by shreds of the anterior coat of the capsule. But sometimes it is the posterior layer which causes the obscuration. This form of the disease is rarer after EXTRACTION than after any other method; and the reason is this: the passage of the crystalline gives rise to more considerable laceration of the capsule than in any of the other processes.

Failure in the first attempt:

Secondary Cataract, requires a new operation. According to the exigencies of the case, it should be either by EXTRACTION or by DEPRESSION, or even by the creation of ARTIFICIAL PUPIL.

After any and whatever operation for the removal of Cataract, the principal care of the practitioner is to obviate inflammation. For this purpose, if not too feeble, the patient should be bled immediately on going to bed, and cold fomentations be then applied to the eye. [a] To

General comments.

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[a] Great as my respect is for the general good sense of Professor STŒBER, yet I cannot silently concur in the twofold measures enjoined by him in the text. I have no objection to the application of cold, or ice-cold "fomentations;" but experience and observation have taught me to *avoid* BLOODLETTING in the sense usually understood by that term, rather than temporisingly to rush to it, where by the use of other measures, it can be dispensed with. On such a theme a treatise might be written instead of a mere note. Yet far be it from me to disparage the practice of the good old surgeons of the old school: I proudly disclaim such an imputation. But times—at least constitutions have changed; and we (as co-existing practitioners) have changed with them. Yes, truly, TEMPORA *mutantur, et nos mutamur* IN ILLIS! Whether from a combination of causes, chiefly, as I consider, owing to novel dispositions to *disease of an epidemic* character—more especially since the visitation of the Asiatic Cholera throughout Great Britain and Ireland—diseases of almost every kind have assumed anomalous features, and taken on new or unlooked-for *courses*, and modes of curative, and of fatal termination. The "sky-ey influences" as Shakspere happily expresses a great fact, claim, in our day, especial consideration; and by the use of that apt phrase, I would be understood to mean METEOROLOGY in the broadest phase of its legitimate signification, namely, fluctuating states of the atmosphere in their physical, moral, and electrical modes of diversified and subtle influence, on health and disease. BLOODLETTING is no longer a matter of routine, except to be denounced as such. It is a decisive measure, as bane or antidote.—Hence, the responsibility of its unadvised advocacy. But I will guard myself from being misunderstood. On such a vital point, no conscientious practitioner can be too jealous of his good name. I practice as I preach. Cases occur in which I *enforce* VENESECTION, but not now once in twenty cases, where, according to the old ideas of a rule of practice in common with medical men, while "young" in the wary and difficult art of "healing," I fell in with a resort to the "lancet"

be useful, fomentations should be continued without interruption for the first two days. The best way of applying them is by compresses over ice; or in lieu of ice, dip them in cooled water, and after wringing the pledgets, apply them over the eye—renewing them as often as they become warm.

Where there is a *rheumatic* diathesis:

Parties subject to RHEUMATISM cannot always bear cold applications, which produce a disagreeable thrill. In constitutions of this description, they must be abandoned. [b]

Diet:

For a time after the operation, patients should be put on a DIET more or less guarded, but not unnecessarily rigorous for feeble or exhausted individuals. On the first days, to avoid mastication, which might be pernicious to the eye, patients should only be allowed thickened milk or soups.

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aforetime, somewhat as I now believe, *too easily*. The abstraction of large, or equivalently copious withdrawals of blood, from the system, now-a-days on *all* "temperaments" under the modifying and subtle sway of disease, as we in 1848 now have to deal with it *in these islands*, is a grave point of practice, and one demanding most advised consideration—II. N.

[a] With respect to RHEUMATISM in my eye-practice, I shall have an early opportunity, (I hope in course of the present year,—1848,) to submit the result of my hospital experience and private practice, *in extenso*: as I contemplate a practical review on other subjects under doubt with the profession, and in which the question raised in the text, shall have fuller consideration than can now be overtaken. RHEUMATIC OPHTHALMIA, and its treatment, have had a large and deserved share of my attention, and by Midsummer I hope to discuss both, as their peculiar merits require.—II. N.

Final remarks by Stœber:

If the sufferer feels no heat, nor a sensation of a foreign body in the eye, and if the edges of the lids are in their natural state, it is useless or even injurious to examine the organ until the sixth day after the operation. Not so when there is great heat in the eye, or when the patient complains of an extraneous body therein, and the edges of the lids are red and swollen. Under such circumstances, the eye should be explored to be treated agreeably to the seat of mischief. In such cases be not sparing in bleeding. Repeat the abstraction of blood, twice or thrice in the day should redness, heat, and pain persist. Where the patient is too weak for bloodletting [from the arm] leech freely. Use cold fomentations, emollients, and medicines which act on the bowels and skin. Finally, resort to preparations of belladonna or of henbane, and to mercurials (calomel internally, and mercurial ointment rubbed on the exterior) when the inflammation tends to terminate by exsudation, as is often the case.

Keep the eye cool, and unexposed to light:

It is essential, after operation for Cataract, not to keep the eye over warm. Consequently, do not cover it with lint, nor allow the patient to use the organ prematurely. No patient ought to do so for at least a fortnight. If the eye has been much perturbed, or if it is irritable, a longer occlusion is advisable. On the other hand, if the eye is kept too long in complete darkness, it becomes so sensitive to light, that patients cannot use it till after the lapse of a considerable time, requiring the habituation of vision *gradually* to bear the light of day. On the eighth day after the operation, the darkness of the chamber may be progressively diminished.

To discern small objects, and to read, those operated upon for CATARACT are with few exceptions under the necessity of using bi-convex glasses, which vicariously supply the function of the LENS. Their use should not begin without advice, till two or three months after the OPERATION.

Here end the views of the old and worthy pioneer—VICTOR STŒBER.—H. N.

PART II.

VIEWS OF MAGNE. [a]

Immodicis brevis est visus et rara senectus.

[On perusal of the ninth chapter of MAGNE's work, which is clever and characteristic; replete with observation, and otherwise to the credit of one of the favourite pupils of the late estimable Professor SANSON of Paris, I at first intended to have incorporated such of his views, as were in harmony with my own experience, in the SUMMARY, which forms the concluding part of this contribution towards a better practical knowledge of the seat, and most successful operations for the cure, of Cataract. Reconsideration, however, has induced me to present MAGNE's views, freely translated, *in extenso.*

Because of the volume in which they appear, being on the "*Hygiène of Sight,*" he apologises with the usual high-breeding of a continentalist, for introducing a chapter on *Cataract,* which, like a "beam" in the eyes of critics, might certainly be objected to; because, forsooth, more appropriate in a treatise on EYE-PATHOLOGY. But his reasons for apparently

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[a] HYGIENE DE LA VUE, ou conseils sur la conservation et l'amelioration des yeux, s'addressant a toutes les classes de la Société. Par le Docteur MAGNE, Medecin oculiste des Crèches du département de la Seine et du Bureau de bienfaisance du premier-arrondissement. PARIS. — pp. 315.

going out of his way to notice CATARACT, are so just and over-ruling, that I take pleasure in re-iterating them. They are so *true*, that they need neither apology nor vindication. They are their own justification. Their tendency is to extirpate popular and intra-professional fallacies. Success attend them!

He says, (page 175,) "The frequency of Cataract—the erroneous ideas which the PUBLIC have for centuries entertained of the nature of this malady—the increasing efforts of impudent pretenders, who profess to cure it *without an operation*—have induced me to consecrate *un chapitre de cet ouvrage aux différentes opacités de l'*APPEREIL CRISTALLIN, *dont l'étude serait plus à sa place dans un traité de pathologie oculaire, si je ne croyais devoir tenir compte des motifs qui viennent d'être énumérés.*"—H. N.]

Cataract in the olden time:

IT is a singular fact, that from ORIBAZES till the appearance of MAITRE-JAN, practitioners should have been ignorant of the true seat of this disease, which nevertheless they were able to cure.

Guesses:

The ancients believed that Cataract was caused by the condensation of the most viscid parts of the aqueous humor between the iris and the crystalline. Such was the generally-received opinion. Later surgeons, considering the crystalline as composed of several small particles placed one over the other, supposed that the opacity was produced by one of these pellicles becoming detached from the lenticular mass.

The honor was reserved to MAITRE-JAN of first discovering, and demonstrating by pathological treatises,

that the crystalline itself, is the seat of the evil. The new theory of this oculist created a warm discussion in the Royal Academy of Sciences, in which ANTOINE and DE-LA-HIRE took part; the former supporting the discovery of MAITRE-JAN, the latter maintaining the generally-received opinion. At last, when LAPEYRONIE and MORAND convinced the academicians, by placing before their eyes opaque crystallines and capsules proceeding from Cataract, it was acknowledged that the ancients were wrong, and that the crystalline, as KŒPLER had shown, is not absolutely necessary for sight, but only for perfect sight. This last fact is verified and described by PLEMPIUS, a physician of Amsterdam, who, in his *Ophthalmography*, thus expresses himself: "Will it not be unexpected by every one when I say that the office which the crystalline performs is not more important than that of the aqueous humor, and that the crystalline may even be removed—its place taken by the vitreous humor, and yet sight shall remain—certainly not so distinct; for the image on the retiform will be confused, unless the retiform were placed in another situation than that which it now occupies?" [a]

Approximations to the true pathology:

Would one believe that, after having laid down that truth, the author should have allowed himself to be anticipated by MAITRE-JAN?

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[a] The words of PLEMPIUS, in the Amsterdam latinity of the period, are these:—*Dicamne vero etiam omnibus inopinatum quidpiam? aio enim vero cristallinum non nobilliori in oculo fungi officio, quam aqueum. Et exempto crystallino, oppletoque loco ab humore vitreo visionem nihilominus celebratum iri: verum non tam distincte quam nunc: confusa enim esset in retiformi pictura, nisi alio situ, quam quem nunc obtinet, retiformis locarctur.*—H. N.

Suppression (?) of Maitre-Jan:

I do not know whether PLEMPIUS was aware of the works of KŒPLER, who in 1604 proved that the *crystalline* could not be the seat of vision, because it is in itself transparent, and performs the office of a lens by re-assembling the luminous rays at the bottom of the eye. It appears somewhat extraordinary that MAITRE-JAN himself did not mention it.

Now that it is fully acknowledged that Cataract consists in a partial or total opacity of the *crystalline apparatus*, one would imagine that surgeons ought to agree in the proper definition of this disease. But it is not so. VELPEAU considers it *an opacity contrary to nature, of the middle transparencies of the eye, through which the luminous rays habitually traverse to reach the retina.*

Comments:

With the best will in the world, I cannot bring myself to believe that the actual state of science requires the same denomination for diseases which have no manner of resemblance. Opacity of the vitreous body has no relation to that of the aqueous humor; and each of these differs in turn, altogether from capsular and crystalline opacities. Cataract is depressed, Cataract is broken, Cataract is extracted, but no person to my knowledge ever entertained an idea of depressing, breaking, or extracting the mass of the vitreous body.

Neither can I admit with MACKENZIE that by Cataract we are to understand *an opacity situated between the vitreous humor and the pupil.* If so, effusions of pus or of blood situated within the posterior chamber, also false iritic membranes, would be Cataracts.

The sense which I attach to a definition of Cataract is much more restrained, and just. The stumbling-block of 'definitions:'

Cataract, from Καταρρασσω ("je trouble;") γλαυκωμα of HIPPOCRATES; ὑποκυμα of GALEN; *Suffusio* of CELSUS; *gutta opaca* of the Arabs; *caligo lentis* of CULLEN; *der graue staar* of the Germans,—consists in partial or total opacity of the *crystalline capsule; of the lens;* or of the *humor* in which it floats. These different parts are susceptible of disease, either jointly or separately.

I say the opacity may be complete, and I say so emphatically; because nearly all authors, including Lawrence and Mackenzie, admit, that Cataract never prevents the patient from distinguishing day from night; and in cases where the *blindness* is absolute, they attribute it to some supposed lesion superadded to that of the crystalline—*amaurosis* for instance. It is of the utmost importance to denounce this error. In effect, the operation would be recommended or forbidden according as the Cataract exists solely, or in complication with amaurosis! I insist, then, and let it not be forgotten, that the alteration of the *crystalline apparatus,* is alone sufficient, in some cases, to plunge the patient into total blindness. Magne *versus* Lawrence and Mackenzie:

What is the nature of this opacity? In other words, in what way do causes act to produce it? SANSON's answer is not encouraging. On this subject says he, "we are in complete ignorance, and in which it is probable we shall always remain." It is not, however, for want of endeavours to explain this phenomenon, for it has given birth to a host of theories. The *nature* of the disease.

Partial review of bygone *guesses*:

We know the opinion of our predecessors from ORIBAZES to the 17th century; and it *is* extraordinary that during so long a period the ideas of HIPPOCRATES, of GALEN, of ORIBAZES himself,—every soul of whom knew the seat of Cataract—should have fallen into oblivion! MAITRE-JAN, who was the first to return to the true way, thought Cataracts were caused by "an acid and corrosive serosity, which has penetrated the crystalline substance, without destroying its nourishing vessels." ST. YVES, who did not overlook the distinction between membranous and crystalline opacities, thought them owing to a deposit of matter of a purulent nature.

Heister and Delpech:

Another opinion, which although variously explained, still numbers several followers, attributes Cataract to a defect of nutrition in the apparatus of the lens. Accordingly, HEISTER admits that the vessels of the lens *become obliterated*. On the other hand, according to DELPECH, this same lens should be in a state of *necrosis!* Per contra, it is certain that inflammation frequently precedes and occasions Cataract.

Contradictory theories:

Thus we see that afflux of blood and inflammation would lead to the same result as *privation* of nutrition. What must we think of such contradictions? Shall we come to the same conclusion with SANSON, and submit to remain in utter ignorance? No: Although I would leave nothing to hypothesis, but base every conclusion on practice, yet I shall attempt an explanation more truly in accordance with facts.

As far as is known from the study of its causes, CATA-

RACT chiefly affects old men. It is even certain that when past the age of sixty, there is often a metallic appearance behind the pupil. Were this affection confined exclusively to old age, we should be compelled to acknowledge that it is owing to a want of nourishment. But it is not so. Cataract shews itself among adults, and is frequently *born with the patient.* In the latter case, now that the fact is beyond a doubt—the CAPSULE *is always affected.* This is the reason why those in such a condition can generally guide themselves without assistance, and can distinguish the form of certain large objects. MAGNE'S adumbrations.

Are the crystalline and its envelope really susceptible of inflammation? As for the crystalline membrane, all surgeons agree in the existence of *capsulitis,* but is there one who can prove that of *phakitis,*—a designation which has been coined, it is true, yet it is undeniable that it is never wanting in ophthalmology. In sound practice we can never admit inflammation of the *crystalline:* hence we conclude that Cataract is produced in two ways:— How Cataract may be pathologically developed:

First,—By defect of nutrition. It is this form which generally affects old men. The vessels which come from the *body* and the *ciliary circle* become by degrees totally obliterated. The crystalline ceases to vegetate, and in the effluxion of time, dies:

Second—By an inflammation which, having its situation in the capsule, has not terminated in resolution. This is the Cataract which affects children and adults. It is supposed that this pathologic state, by diffusing the nutrition of the crystalline, prevents it afterwards resisting the *opacity* which is only an after-result.

To resume. I admit two diseases of a different nature, both producing the same result and requiring the same operation. One is inflammation. The other is a gradual enfeebling.

Mere "statistics" questioned; and very sensibly.

It is not without reason that authors have included the influence of age and different professions, in the study of causes which sooner or later obscure the transparency of the crystalline apparatus. Sex, constitution, climate, in turn have been made the subject of research and of statistical works. I shall, however, abstain from citing figures. In the disease which occupies our attention, it is necessary to present MASSES OF OBSERVATION to obtain a result of any use. Hence it is, that the occupations of blacksmiths, locksmiths, glass-blowers, cooks,—in a word, all who work exposed to the heat of a strong fire, are more liable than others to be attacked by Cataract. This has been particularly remarked in the case of agricultural labourers, who pass whole days with their heads bent towards the earth, which is either heated with, or is reflecting, the rays of the sun. It is the same with persons who are in the constant habit of using microscopes, lenses, &c.

BEER'S ideas.

According to BEER this affection should rather be found among individuals who pursue their work in a *sitting* posture—which by compressing the stomach, causes an afflux of blood to the head. It is undeniable, that Cataract chiefly attacks old people. I am not equally certain that, as is said, *men* are more liable to it than *women*. It is also asserted that the north predisposes a person to this disease more than the south.

Along with this assertion we find another, attributing to the neighborhood of volcanoes that frequent opacity which is remarked in Sicily and the kingdom of Naples.

Questionable points of Mackenzie:

Is it true that CATARACT is ordinarily observed among those of a robust temperament, in good health, but rheumatic? Mackenzie pronounces in the affirmative! I cannot refrain from again remarking on the strange abuse which is made of "rheumatism" in ophthalmology. The same author, it appears, has three times noticed Cataract in persons from eighteen to twenty-five years of age, and afflicted with DIABETES MELLITUS! This surgeon also thinks that the crystalline apparatus may lose its transparency by cold applications, suddenly applied to the extremities; for the purpose of arresting menstruation for instance.

Influence of struma, and mental excitement:

It is easier to explain the action of irritating vapours and of internal inflammation of the eye, of traumatic injuries, and of contusions of this organ. A certain influence has also been attributed to scrofula, and to syphilitic infection. Neither can we deny the influence of mental affliction. I shall not speak of a variety of causes enumerated, in books, as productive of Cataract. A great number, in reality have no relation to the subject. But there is one which I must not forget to mention; namely, that it is *hereditary*. On this point all surgeons are agreed. It will be easy to find proofs in the works of CARRON DU VILLARDS, DESHAYES-GENDRON, JANIN, MAITRE-JAN, PETIT, (of Lyons) RICHTER, SANSON, WARDROP, &c.

Argument continued:

If Cataract always appeared in the form of a white spot occupying the pupillary margin, it would be easy to distinguish it at first sight. But it does not. It varies under the triple relations of colour, progress, and development. The sensations which the patient feels, have on the contrary, great uniformity. They have been classed under the denomination of *subjective signs.*

Facts:

Generally, when consulted for Cataract, we find that for a greater or less time—some months or years—the sight which at first underwent a painful sensation has become more and more difficult: a slight mist—a little smoke—seems interposed between the eye and exterior objects. This cloud at length assumes the appearance of a gauze curtain, which scarcely allows objects to be distinguished, and totally destroys the power of seizing their details. Patients also generally perceive that the sight is more perfect at the side than in front of the face, and during twilight and dark days than by a bright light. The flame of a candle ceases to appear as brilliant as formerly, but is greatly augmented in size, and seems surrounded with a large halo.

Progress of symptoms.

At the same time that the sight is affected, sufferers also experience a sensation of small bodies placed before the eye, and which they compare to cobwebs, streaks like ribbon, to zig-zags, or to hairs. Persuaded at first that this appearance exists external to, and not within the eye, they tell you [oddly and deludedly] they "have had their hair cut," or have "changed their residence." The little corpuscles, wrongly named *muscæ volitantes*—are

always placed in the same relative direction to the axis of the eye. Similar sensations are found among persons attacked with *amaurosis*, so that the surgeon would be much embarrassed in the diagnosis of incipient CATARACT, were all doubts not removeable by the use of SANSON's "three lights"—a phenomenon presently to be explained. Facts:

Such are generally the "subjective signs" of *Cataract*; and it may be useful to know, that they are almost always developed without pain—contrary to what happens in *amaurosis*. Characteristic *absence* of *pain*:

It seems that the objective signs should be exclusively drawn from an examination of the *pupillary margin*. It is in fact, in this region that these modifications are found which particularise Cataract. But other indications exist, which must not be neglected. Thus, persons blind from amaurosis, exhibit an appearance peculiar to themselves. They walk with the head haughtily backwards. Their countenance is immoveable. Their aspect presents an air of stupor and dullness, which bears some analogy to the enamelled eyes of wax figures. Contrasts:

It is not so, with those whose blindness depends upon CATARACT. Their external appearance is not changed. The visage retains its mutability. The eyes instinctively direct themselves towards the light, which they can usually yet distinguish from darkness. The eye-ball retains its size. The *iris* ordinarily enjoys its contractility, except in cases to be noticed. As for the pupillary region, its habitual dark colour is succeeded by a shade of mother-of-pearl, or opal approaching to gray or yellow- Amaurotic not like Cataracted patients.

amber. Sometimes it is russet brown, and even though this has been disputed, the pupillary margin retains its ordinary colour, when the *Cataract* is dark.

Contrasts continued:

Change of colour is not the only sign furnished by the pupil. When the opacity is complete or nearly so, two deep circles are easily distinguished—represented on the white capsule. The first is formed by the free border of the posterior fold of the *iris*. The second consists in a shadow which projects this diaphragm; the shadow indicating the distance existing between the *iris* and the *crystalline apparatus*. It is thought that these black rings are susceptible of modifications by the movements of the iris.

Counterfeits; and difficulties:

The indications enumerated, do not assure an infallible diagnosis. There are morbid alterations of the eye which present a great analogy to symptoms of Cataract. For instance, AMAUROSIS sometimes presents a yellowish-white appearance *behind* the pupil: GLAUCOMA the same. The pupillary margin may be black in Cataract, and also in amaurosis. The pupil may be dilated, or contracted or deformed, without its being possible to pronounce with certainty. But besides GLAUCOMA and AMAUROSIS, there exist alterations which it is necessary to avoid confounding with opacity of the crystalline apparatus: I allude to *false Cataracts*.

Iritis distinguishable.

False membranous Cataract, or one which is the product of *iritis*, is easily distinguished; because the opacity is not situated behind the pupil, but in the opening, or even before it. The iris where it adheres is disturbed, and the disengaged parts look as if torn.

False *purulent* Cataract, follows *hypopion.* In this case there is no false membrane, but there are scabs or clots formed by the unabsorbed pus. The iris to which these clots adhere, is generally motionless. Pus after hypopion.

False, *bloody* or "hematic" Cataract, results from *hypohaïma.* Its formation is of the same nature as the preceding. The serosity of the blood has been absorbed, and gives place to a small fibrous lump which appears in the form of a scab, or of small reddish granulations. Residuum of blood:

Lastly, false *pigmentous* Cataract consists in adhesions which unite to the capsule, portions of the thin membrane which retains the black pigment on the posterior surface of the iris. Or of pigment.

To SANSON we owe a proceeding by which Cataract may never be mistaken. Perhaps the reader will find it interesting to peruse a communication relative to this discovery, which I addressed to the institute [of France] three years ago. Sanson's "discovery:"

[HERE IT IS.]

"Since the publication of the memoir which I had the honor of addressing to the Academy of Sciences, in respect of a black Cataract in which I performed the operation of DEPRESSION, many of my professional brethren have applied for explanations either on this subject, or on the mode of observing and using in practice, the "THREE IMAGES" *of a candle reflected in the eye.* All I have thus learned has proved to me that SANSON's discovery is far from being known, or appreciated. I conceive, therefore, I ought not to be silent on the subject. MAGNE's supplemental memoir:

In 1836, Professor SANSON, observed, and announced to his clinical class in 1837, that when a candle is held before the dilated eye of an amaurotic patient, three reflections of the flame are always seen *in the eye*, placed one behind the other. The first is most forward and seems upright. The second or middle one, is less bright and is inverted. The third or hindmost, is least bright, and is upright like the first. Two disciples of SANSON (Bardinet and Pigné) explained this phenomenon, by experiments upon watch-glasses, while their master on his part, constructed with glass, the pieces which compose the eye, and imitated the different degrees of CATARACT. I possess this curiosity, the ingenuity of which many of my brethren have studied. SANSON and his pupils came to the same conclusion: namely, the first upright reflection is produced by the cornea: the middle inverted one, by the posterior segment of the crystalline capsule: the hindmost upright one, by the anterior segment. Opacity of the cornea, destroys all the three reflections. Opacity of the anterior capsule, causes the disappearance of the two hinder reflections. Opacity of the posterior capsule, prevents the production of inverted reflection. In other words, in capsulo-*posterior* Cataract, the middle or inverted light, is not seen. In capsulo-*anterior* Cataract, the first upright light is the only one visible: the same in capsulo-lenticular Cataract. The experiments of PASQUET, in addition, confirmed the conclusion that Cataract, even when incipient, may always be distinguished from amaurosis and glaucoma.

Seeing that this discovery of the 'three lights,' was destined to render vast service to ophthalmology, it should as a *means of diagnosis* be of the greatest utility; for the extensive practice of Professor SANSON often enabled him to verify the results of his first experiments. How is it then, that now a-days it is scarcely used—I had almost said forgotten? I suspect the difficulties which a surgeon meets with, who is not accustomed to its use, are usually discouraging; and several fruitless trials are not followed by fresh attempts. It must be so, for I have heard the chief of the old EYE-CLINIQUE of *la Pitié* say, *he* had

lost much of his confidence in the use of the candle, because it had often led him into error. Several tell me *they* have found it the same. But does that militate against the discovery of Sanson? Ought it *therefore* to be rejected as not to be depended on? Assuredly not. It is not the process, but the bungling application of it, which is wrong. Hence, a little explanation is necessary to complete the work of BARDINET and PIGNE. May the following, joined to attention and perseverance, render "the lights" as means easy to those who wish to employ them.

It is essential that the pupil be dilated:

The first precaution is one which has been found indispensable every time the experiment has been tried. It is to *dilate the pupil.* (Be it remembered, it was in Amaurosis that SANSON made his first observation.)

Why:

The scope of the pupil is in fact limited, and when the candle is presented it becomes still further contracted: consequently, we have to look for the appearance of the light, in a circle whose diameter does not exceed three *millemétres.* In so circumscribed a space, the most expert surgeon can only, and with infinite difficulty, distinguish what takes place. I admit that under such circumstances a practitioner finding the middle and hindmost reflections to be wanting, would not push his researches farther, and would think himself authorised to conclude that the eye submitted to his notice is afflicted with Cataract. He may be wrong, and afterwards think it right to reject the use of the candle, owing to a mistake which has been committed, but which would not have been so, had the eye been previously dilated. It is then essential, before holding the lighted taper to the eye, to obtain as large a pupillary space as possible.

If I dwell upon this circumstance, it is because I have often satisfied myself, that the examination has been made *without* dilating the pupil, although SANSON expressly pointed out its necessity. Every one is aware of the effect of Belladonna on the *iris.* The area of the pupil may be doubled or tripled in extent, and by its power the circle in which the reflections of the candle

are seen, may be enlarged to a diameter of seven or eight *millimétres*. If desirable to obtain immediate dilatation, we instil some drops of OEHLERS's Atropine into the eye, in the proportion of five centigrammes to a spoonful of water: in a few minutes the pupil is dilated. This application is followed by a great secretion of tears, and injection of the white of the eye. What pain there is, is very bearable, and the vascular injection and epiphora, are of short duration. The patient must keep the eyelids perfectly closed, otherwise the solution of *atropine*, flooded by the tears, flows out with them, and the effect desired, is defeated. So much for dilation of the pupil.

Examine in a darkened chamber.

Another precept equally essential for observance is, that the eye should be examined in total darkness. [a] If not, the external light may cause reflections upon the eye, which might be taken for those of the candle, or at least would prevent the latter from being perceived.

After requisites:

Having got the pupil duly enlarged, the patient is placed in a dark room, and the candle moved to and fro as SANSON has directed. Besides causes referable to the state of the pupil, and to the action of the external light, there are others which may lead to the supposition that the three images are faulty. There are, however, two cases of incipient Cataract in which the triple reflection may be discerned. 1st—The Cataract is so slight that it only consists in a light cloud, through which the rays of light penetrate, although with difficulty. Second, —The opacity has begun at the circumference, and only affects a limited part of the *crystalline* surface, the rest

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[a] This is evidently an Irishism —a regular Hibernian "escape of the pen," on the part of my French friend MAGNE, whose attention is exclusively bent upon his reigning idea, regardless of the expression which should convey it duly to others. How an eye could be examined in "total darkness," except by a Highlander pretending to "*second*-sight," or a fanatic or pretender laying claim to *clairvoyance*, I need not enlarge on. MAGNE's meaning is quite clear, though his language is a bull.

remaining perfectly intact. The surgeon who sees three reflections in these two cases, would conclude that no Cataract exists; and afterwards when the opacity becomes distinct, he would impute the error of his own diagnosis, to the faithlessness of SANSON's process, [and be wrong.]

Remarks: Although these two instances are, I own, very embarrassing, yet the observer need not be deceived. If the alteration consists in a light cloud, the reflections do not resemble those which are seen in a HEALTHY, or in an *amaurotic* eye. The first reflection only is brilliant, and the others are so pale that this pallor is a hint, which coupled with other symptoms, will decide the surgeon's opinion. If the apparatus of the crystalline is affected only in a limited point;—if this point does not present itself to the candle, you will invariably see three reflections: yet after your examination, you cannot ascribe the diminution of sight either to AMAUROSIS or to GLAUCOMA. It is then necessary to move the eye in every direction, holding to it some object which shall follow all its motions.

Essentials: When the *object* is fairly in the direction of the nucleus of the Cataract, it will no longer be seen by the patient. And now, having things fairly in train, the surgeon should move the candle so as to bear on places which had previously escaped him. He will then see but one or two lights, according as the opacity is anterior or posterior; and he may then conclude, that the disease *is* CATARACT. To these points I invite the attention of all practitioners who are anyhow versed in the practice of eye-surgery. It is from not having sufficiently studied them, that men even of great experience have fallen into error.

Cases in point.— I adduce two cases which exactly apply to the above facts:—In June, 1841, Her Grace the Duchess of M— came to consult SANSON, who was then suffering severely under the lingering and painful disease which deprived us of him. He was unable to attend to her, but requested me to examine her Grace's eyes. They appeared healthy;

the *irises* were moveable; the pupils were dilated. At each of my trials with the candle, I found the middle and the hindmost light, scarcely visible. I inferred, but as yet without venturing to pronounce, that there were two Cataracts. For greater certainty, I recommended dilatation with Ex. Belladonnæ to the base of the orbits; and I put off the second examination until the following day, when I made it in company with SANSON, to whom I had communicated my opinion. After several trials we perceived the two posterior reflections, but of remarkable paleness, such as I had witnessed on the preceding evening. SANSON diagnosticated as I did, that there existed two incipient Cataracts. Time confirmed our judgment. Several surgeons had affirmed that the crystalline apparatus was sound. It is right to remark that the disease was only a "slight cloudy disturbance," which had been overlooked by men little accustomed to the use of "the lights," or which perhaps they neglected to employ.

Another case in illustration:

In the second case, an error was committed by one of the most practised eye-surgeons. In the same year and about the same date, Madame B—, wife of a member of the Institute, applied to SANSON. The sight of the left eye began to be impaired: that of the right was sound. I am unable to state *explicitly*, the result of the examination. We saw the patient only once, and we lost Professor SANSON before the time fixed for the next consultation. After the death of my instructor, Madam B—, went to Dr. S—, who prescribed a course of treatment; and at the head of his prescription, he wrote as his diagnosis "*amaurosis*." Madame B— followed the advice of this oculist for months without improvement to her sight. Having heard that SANSON's eye-practice was assigned to me, she came in December, when I examined her eyes again. As I prepared the candle, she reminded me that I had made the trial before SANSON, and that I had remarked about a *point where I could see nothing*. This was again the result. I prescribed belladonna. Next morning the crystalline appeared intact, throughout nearly its whole extent. Towards the internal angle

there was a commencing opacity of the *capsule*—an opacity which was then perfectly revealed by the absence of the two hindmost lights, which I was afterwards able to discern by daylight. The eye-ball was moved in all directions, and my finger held before the opaque point remained unseen by the patient, but it became visible as soon as it approached the sound part. My diagnosis consequently was—an incipient anterior capsular Cataract. I sketched the form and situation of its point, and engaged Madam B. (who was in communication with several physicians) to shew the sketch to some of my brethren, and have it examined. My diagnosis was confirmed. I have since seen this patient several times, and although the progress of the disease has been very slow, I could nevertheless distinguish an affection which at its commencement SANSON's process enabled me to discover. The indications drawn from the discovery of my master, are then infallible; and I cannot too much recommend the profession to employ so useful a resource, although it *is* of difficult application—I may say very difficult, since the practitioner in question, notwithstanding his daily experience, was mistaken. What then—I have often heard it asked—"What then, is the use of employing a means of diagnosis which depends upon so much nicety? Besides, CATARACT is so easily recognized!" How absurd! Such remarks prove either that you have seen very little, or seen very badly. Every day we meet with crystallines having metallic reflections announcing opacity. Place a candle before them, and the three lights (*!!!*) shew, that the transparency is perfect. I know an old clergyman whose crystallines have a silvery appearance, but he has no more a Cataract than I have."

What *part* is affected?

We now know, that Cataract may affect the *capsule*, the *crystalline*, and the *humor* of MORGAGNI. The disease once perceived, is it possible to decide what part of the apparatus is affected? Certain authors have laid down endless divisions, based on symptoms wholly imaginary. It appears to me much better to confine our-

selves to species possessing distinctly marked characters. In medicine we can very well dispense with imagination, but sense and clearness are indispensable.

Discrimination:

Capsulo-*anterior* Cataract may be known by the following signs:—The opacity, of a mother-of-pearl or chalky whiteness, appears under the form of streaks, or converging spots. It generally begins at the circumference, and particularly affects young persons, although many eminent surgeons have thought the contrary. The patient perceives no change in passing from light to darkness, a phenomenon which is easily explained. The capsular circumference being first affected, the pupillary dilatation does not aid the penetration of the luminous rays. Its contraction also produces no effect; for however contracted the *pupil* may become, it will always leave the centre of the *capsule* free, which does not yet share in the alteration of the surrounding parts.

Discrimination continued

Posterior capsular Cataract, has the colour and streaks like the preceding. It differs however, in this:—the streaks are deep, and evidently present a concave appearance. This opacity is rarer than any, and it is thought that it cannot be diagnosticated, when the anterior capsule has lost all its transparency.

The Cataract of Morgagni:

MORGAGNI's Cataract, when the eye is at rest, presents two portions of a circle, the uppermost of which is transparent, and the other of a cloudy appearance enclosing rough white flakes. If the eye performs any movement, the liquid no longer seems transparent, but is distributed throughout. Yet it is nugatory to attempt

the production of a complete cloud, either by ocular movements, or by pressing the eye-ball. Whatever it may be, this species of Cataract has a great tendency to communicate with the crystalline and its capsule, and to acquire so great a size that the capsule is distended and is driven forward against the *iris*, which it compresses.

As to "lenticular" Cataract, &c. &c.

Lenticular Cataract, the most frequent of any, chiefly affects old men. It is generally of a uniform colour, yellow or greenish. It begins at the centre, from which rays are seen extending on all sides towards the circumference. The two circles previously mentioned, are chiefly observable in this species of Cataract. Patients afflicted with it, distinguish objects better by twilight than in a strong light. This is owing to the pupil being dilated by the darkness which discovers the circumference of the crystalline as yet untouched, whilst a strong light contracts the pupillary space, and only leaves the central part of the Cataract opposite the opening.

As to *mixed* Cataract;

Capsulo-lenticular, or "mixed Cataract," consists of an opacity of the entire crystalline apparatus. It may affect the centre only, without gaining the extremities. It is frequently the most advanced step of the Cataract already described, but it may attack all parts at once. Some attain an enormous size, so that the *iris* is pushed forward almost in contact with the *cornea*. In this case, it is thought that the shadow projected by the iris no longer exists.

Disposal of the non-essential.

This terminates the symptoms which I have deemed necessary to give, to distinguish one Cataract from another.

I should never have done, were I to describe the various species some "oculists" have enumerated. The names "trabéculaires"—"Barrées"—"pyramidal"—"branlantes"—"Silliqueuses," &c.,—indicate oddities not worth while dwelling upon.

The question of "consistence:" progress; and opacity:

Great importance has also been attached to the *consistence* of Cataract. According to some, a Cataract is "soft" when it is very voluminous, and pushes the iris forward. Contrary appearances forsooth indicate hardness! These assertions appear to me most hypothetical. I have often met with hard Cataract, and so voluminous, that I have found extreme difficulty in inserting the needle between the capsule and the cornea, without running the risk of injuring the serous tunic which clothes the back of this last membrane. I don't think any thing positive can be deduced from the *progress* of Cataract in respect of its consistence. Progress, besides, is very variable. I have said, *opacity* may come on suddenly—in some hours: but it may be months, nay years, before the patient's sight is seriously impaired. It seems difficult to determine at what period a Cataract has arrived at maturity. According to DEMOURS, it must take about two years before its maturity is complete. I am of opinion that every opacity may be considered mature, when the patient can no longer distinguish day from night.

Of complications:

The different alterations which *complicate* Cataract, exist either within or without the eye. They differ in their degrees of importance. The worst complications unquestionably are—*amaurosis*, *glaucoma*, and *atrophy* of

the eye-ball; since in these three cases an operation offers no resource. Nevertheless we should not rush to a belief in Amaurosis, because the patient has no perception of vision. Thus MACKENZIE lays it down that this affection exists, if the pupil is dilated, immoveable, and sight quite gone. Such signs are far from deciding the question. They are found when the Cataract, even without any complication, is very voluminous, and bears upon the *iris*.

The author in question, regards trembling of the iris as very unfavourable: but this is found in eyes which are perfectly healthy. The utmost we can admit is, that it greatly complicates the task of the operator, whose manœuvres thereby become more difficult of execution. Other complications:

It is the same in respect of *adhesions* between the capsule and the iris. Adhesions:

Dilution—[deliquescence, or *thawing* as of a lump of ice.—H. N.] "Dilution" of the vitreous body, is of greater consequence than trembling of the iris. Sometimes it accompanies Cataract, and should make the surgeon reserved in his prognosis, although it does not always constitute a source of failure.

Authors have also included among the number of complications all chronic *ophthalmias* of the ocular membranes and eye-lids. We cannot deny but that such affections exercise a certain influence on vision. We can however, lay it down as a general *thesis* that they are immaterial in deciding the question of an operation. Perhaps it

Constitutional taints: may be imprudent to say the same of complications which exist out of the eye—that is to say with reference to the constitution. *Rheumatism*, *scrofula*, and *syphilis*, are generally considered as obstacles which habitually hinder the re-establishment of sight. If these affections are spoken of as having become real *cachexies*—agreed: Where they are not, such apprehensions cannot be justified.

Anomalous disappearance of Cataract: Cataract does not always end by destroying sight. There are numerous instances of its having gone on for a time, and then suddenly disappearing for ever. But it must be borne in mind, such a happy termination has only occurred in cases where the opacity was connected with constitutional derangement, and ceased with the state to which it was owing.

Reality, as opposed to Ideality and deception: The apparatus intended to perfect the sense of sight having become partially or totally opaque, the treatment consists in restoring the apparatus to its pristine transparency; or if that is impossible, in removing the opaque body from its place by an operation. The idea of curing CATARACT by *medical treatment*, is derived from the remotest antiquity. This PRETENSION, for such it must be called, is, and has been resorted to in all ages by fellows who only regard it as a stepping-stone to fortune. In our own time even, we have seen a *soi-disant* "oculist" use the most insulting language to the medical body—and to a surgeon, who was its glory both for his talents and his integrity. On the other hand, conscientious trials have been made by honorable men. ["Trials"—and with what results?—H. N.]

I won't speak of a crowd of empirical attempts, among which powder of wood-lice was thought to succeed! I shall only treat of rational medicines. According to MACKENZIE, the different medical treatments with which to combat Cataract, may be reduced to three. 1st—Anti-phlogistics: 2nd—Stimulants: 3rd—Revulsives. To which we may add narcotics and specifics.

Clinical experience of SANSON:

Before going further, and without wishing to prejudice the question, I think it well to place SANSON's conclusions before the reader, as he must always be quoted when practical [eye] surgery [in France] is treated of. To return, said he,—"to return: if we don't regard the cure of Cataract as quite impossible by other means than by operation, we at least consider it as exceedingly rare. Our opinion is confirmed:—

1st,—Because we have never seen a single patient cured without an operation whom we have submitted to the "*treatment*" of those who *profess* to perform the exploit.

2nd,—Because, having ourselves attempted it, we have obtained no satisfactory results.

3rd,—Because we are not acquainted with any authentic case of such a cure.

4th,—Because diseases have often been mistaken for Cataract, which were *not so*.

5th,—Because we have frequently had to operate on patients who have been passed [palmed off!—H. N.] as cured."

MAGNE's Peroration and *resumé*:

I admitted at the outset of this article, that Cataract was caused by want of nutrition, and by inflammation.

I think such a division will explain the cures which some surgeons pretend to have performed, *without* an operation. It is impossible for me to conceive that any course of medicine can exercise such a favorable influence on Cataracts which are slowly developed in old men, and without some other appreciable cause than old age. But I can easily comprehend that energetic medical treatmeut may re-establish sight, when it is altered by inflammation of the iris, or of the capsule,—whether the inflammation be specific or not. Nothing in fact hinders us from admitting, that in a *syphilitic diathesis* where the crystalline apparatus shares in the general state, when the constitutional taint is remedied the sight will also participate in the improvement. We have also seen that opacity of the *capsule,* when this membrane is inflamed, disappears under the action of *antiphlogistics, revulsives,* and *mercurials.* I can adduce a great many Cataracts of this nature *cured without operation.* It appears to me, medical treatment should be confined to such exceptions. Beyond cases of this kind, any attempt would be useless: moreover, an operation is preferable to revulsives, the employment of which is tedious, and causes violent pain. This at least is my conclusion from an examination of "*sincipital cauterization,*" [burning the back of the head!] extolled by our honorable brother-pill, Dr. GONDRET. The question of TIME and PAIN *is certainly in favour of an operation.*

When it is fully ascertained that nothing but surgical aid can restore the patient's sight, to what kind of operation shall we give the preference? This question, though it would seem to interest the operator only, deserves examination by others.

Every-one knows that there now exist three principal methods of operating for Cataract:

DISINTEGRATION,
DEPRESSION, and
EXTRACTION.

Patients often ask me beforehand what process I intend to employ? All three have a relative value. This is a truth which should be understood, instead of some saying, "I will trust to Mr. SUCH-A-ONE because *he* employs such a method." On this catch the charlatan does not fail to take advantage of PUBLIC CREDULITY, by vaunting the superiority of "*his* method" at the expense of others. But every conscientious oculist should be equally expert at Extraction, Breaking, and Depression. *The* NATURE *alone* of the *Cataract, should decide the choice of the operating process.*

Postscript (well-thought of) about "Spring:"

One word more to terminate my observations. Surgeons have so many times *written* that Spring is the most favourable season for an operation for Cataract, and patients have so often repeated this hackneyed precept, that one scarcely dares advise an operation at any other quarter, fearing to be saddled with the blame of a failure, ascribed [forsooth] to the wrong choice of season. I avow, I cannot comprehend why some oculist has not risen to protest against a custom so contrary to common sense. Who, in point of fact, does not know that spring is the season of a host of inflammatory diseases, referable to that kind of ferment which is manifest as well in the beings which constitute the animal, as in the creatures of the vegetable kingdom.

Therefore, *reversing* the "wise saw" I would almost say "*Never* have the operation performed *in spring,*" but that I know by experience that OPERATIONS *for Cataract* SUCCEED *in* ALL SEASONS. This remark is not immaterial. It is savage to condemn a fellow-creature who is blind, to remain six or nine months IN DARKNESS, when the surgeon, in the twinkling of an eye, can let him see the LIGHT—*the object of all his wishes!*

PART III.

VIEWS OF DESMARRES:

WITH

SUMMARY

OF PRACTICAL REMARKS ON THE BEST MODE

OF

OPERATING FOR CATARACT.

By HUGH NEILL,

(Surgeon to the Liverpool Eye and Ear Infirmary.)

Guided by similar considerations to those expressed at page 71 of this treatise, (with reference to the views of Magne, which there follow those of Stoeber,) I have resolved upon submitting the views of another learned and practical eye-surgeon of the school of France; viz., Desmarres of Paris, who last year published a large and handsome work on diseases of the eye, extending to more than 900 pages of closely printed matter, interspersed with excellent wood-cuts. It is a production of marked research; and though occasionally couched in terms somewhat too scholastic, and ultra-technical, its merits otherwise will secure the respect of every practitioner who is imbued with a love of the art, and duly interested in the progress of eye-surgery "all the world over."

Though my more immediate business relates to *Cataract*, yet I cannot allow myself to "buckle to," to an analytic review and free digest of the elaborate article in his 7th chapter, without recording my humble

testimony *con amore* to the *general excellence* of DESMARRES' volume. As a Frenchman he has rendered his authorship conspicuous by the pains and space which he has bestowed upon the most approved means of *treatment* and "therapeutic applications." We should *all* bear in mind that the object of every *practitioner*, is above all *to cure ;* a department nevertheless usually and strangely neglected by the average of continental writers, who seem as if fairly run away with by their engrossing pair of hobbies—Pathology and Morbid anatomy ! !

DESMARRES is at the head of an Infirmary which he himself founded, expressly for the treatment of diseases of the eye. Like myself, he has thrown his hospital open, by invitation, to the visits and observation of his professional brethren ; and justly does he congratulate himself, on the great number of diseases which thus, by undergoing the ordeal of a severe "public *expérimentation*," have tested his own practice, and the theoretic notions of others. For the last eight years, he has given up the whole of his time to the practice and *teaching* of ophthalmology. I observe by a note in his concise preface, that 1530 indigent patients were on his books during 1846 ; with ten beds provided for those under operation.

With these desultory remarks I have the gratification of reproducing the gist of this most recent French author's views on Cataract. Most willingly should I have translated them in full ; but such an exposition (extending to 170 pages,) would have far exceeded the limits, within which this concluding part of my summary must be confined. Moreover, amplified repetitions would have been inseparable from such a proceeding. Even as it is, I feel with all my desire to do justice to a fellow-labourer in the same emulous field, that I cannot too much avoid profitless repetition, or sufficiently condense my remaining matter, as a practical man professedly addressing practical readers.—H. N.

VIEWS OF DESMARRES. [a]

That this disease was known to the ancients, the works of Hippocrates and Celsus leave no doubt. Yet their ideas on the subject were very erroneous. They gave various names to it. Most of them thought it was the result of a *fall of liquid* which troubled the transparency of the humors of the eye, and destroyed sight. Its seat was by some supposed to be in the cornea, by others in the vitreous body; and the truth continued matter of doubt even after the year 1604, when KEPLER shewed, that the Crystalline—which was regarded as the *immediate organ of sight*, was merely an instrument of refraction. LAPEYRONIE and MORAND had actually to produce, to the Paris *Academy of Sciences*, opaque crystallines and capsules, extracted from cataracted eyes, before that learned body could definitively believe that the *lens* and its *enveloping membrane* lost their transparency in this disease. Then followed the recognition of the importance of QUARRE's and LASNIER's observations; and as a necessary consequence the works of MAITRE-JAN, BOERRHAAVE, BRISSEAU, WOOLHOUSE, GEOFFROY, and in particular those of MURALT, HEISTER and CHAPUZEAU, were "duly appreciated." Their

Cataract.

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[a] [Traité Théorique et Pratique des Maladies des Yeux, par L. A. DESMARRES, Docteur en médecine de la Faculté de Paris, professeur de clinique ophthalmologique, médecin du bureau de beinfaisance du 4e arrondiss., &c., &c.—PARIS, 1847: pp 904. Chapter vii; article iv. p., 493-663.—H. N.]

writings proved that Cataract may be caused not only by opacity of the lens and of the capsule, but also by disorder of the "liquor Morgagni."

Definition of Cataract in general:

Definitions of Cataract are extremely numerous. DESMARRES thinks it superfluous to examine them, but that Velpeau's deserves attention. In the actual state of science, *Cataract*, according to VELPEAU, should be "*an unnatural opacity of one of the middle transparencies of the eye, which the luminous rays habitually traverse to reach the retina.*" [a]

Such a definition is obviously objectionable. It is too comprehensive. It includes all possible opacities of the membranes traversed by the light. It would be as applicable to opacities of the cornea, as to Cataract. Accordingly, DESMARRES considers Cataract as *a total, or partial opacity of the crystalline apparatus*, and prefers such a general definition to the exclusion of every other.

CLASSIFICATION OF CATARACTS.

Distribution: true and false:

Since the time of BEER, "Cataracts" have been distributed into *true* and *false*. Such a division has been cavilled at, by that description of people who are nothing if not critical. DESMARRES advisedly retains it.

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[a] [Velpeau, *Leçons Orales* faites á l'hôpital de la Charite, recueillies par MM. les docteurs Jeanselme et Pavillon, 1840-1, 3 vol. in 8; tom i, p. 317.—See *ante* (p 74) as commented by MAGNE.—H. N.]

Among *true* Cataracts may be placed those whose seat is in the crystalline and capsule, insulatedly or simultaneously. We there find *Lenticular*-Cataract, hard, soft, or liquid. *Capsular*-Cataract; *capsulo-lenticular;* and "secondary cataracts." With "*false* Cataracts," he ranges opacities which have their seat in the pupil, and which are formed by the organization of a substance either *fibrinous, purulent*, or *bloody;* also pigmentous or *uvëan* Cararact. Thus it appears that such a division does *not* exclude (as captiously pretended) the classification of Cataracts according to their *seat*. Some may say a false Cataract is not a Cataract; but after all, this is a mere play of words, inasmuch as according to DESMARRES the opacity, definitively, is seated in the pupil and thwarts the fulfilment of vision. The following table (page 501) gives an exact idea of the division adopted :—

CLASS I.—TRUE CATARACTS.

Tabular exposition of the "True:"

A.	LENTICULAR CATARACTS.	Hard	Green : Black : Osseous : Stony or Limy.
		Soft	Striated; windowed; starred; barred; dehiscent; three-branched, &c., &c. Disseminated, or dotted. Congenital. Traumatic. Glaucomatous.
		Liquid	Interstitial (Morgagnian.) Cystic; purulent; foetid.
		Other varieties of soft, hard, or liquid Lenticular Cataract.	Shaking, or floating Cataract. Luxated (dislocated) Cataract.

B.

Capsular Cataracts.	Anterior . . .	Pyramidal or vegetating.
	Posterior . . .	Dry siliquated.

C.

Capsulo-Lenticular Cataracts.	Every variety of lenticular and capsular Cataract.

D.

Secondary Cataracts.	Lenticular;
	Capsular;
	Capsulo-lenticular.

CLASS II.—FALSE CATARACTS.

Of the "False:"

Cataract.	Fibrinous:
	Purulent:
	Bloody:
	Pigmentous.

The above division presents not only the advantage of establishing a classification of Cataract in relation to *seat*, but also indicates its differences in respect of *density*:—the importance of attending to which latter characteristic, Desmarres deems so very significant, that all through his work he reverts to, and dwells upon it. (p. 502.)

At page 519, Desmarres contrasts the characteristic differences between the three kinds of Lenticular Cataracts, which are not only recognised for systematic purposes, but likewise exist in the nature of the disease. As every thing conducive to nice and thorough discrimination, should be made available in eye-practice, I gladly reproduce the table in an English dress. Here it is:

DIFFERENTIAL CHARACTERISTICS OF HARD, SOFT, AND LIQUID LENTICULAR CATARACTS.

HARD.	SOFT.	LIQUID.
Opacity proceeding from the central part of the kernel of the crystalline, to the surface. *Discolouration* or spot, gray: green or black as exceptions. *Circumference* of the crystalline, always retaining a little transparency.	*Opacity* proceeding from the surface to the centre. *Striæ* white or amber color, often reuniting in the middle of the lens —whose surface they divide into a great number of triangles. *Colour* sometimes uniform, milky, or of a cheesy appearance. *Circumference* always opaque.	*Opacity* proceeding from the surface to the centre and superimposed in layers, imbedded during the repose of the eye. *Colour* uniform; yellowish grey when the eye is in motion. *Circumference* always opaque.
Volume very small.	*Volume* very large.	*Volume* very large.
Iris very moveable, and not at all swelled.	*Iris.*—Little or no motion: excessively swelled in front.	*Iris.*—Little or no motion: sometimes presenting oscillations from the front backwards.
Projected shade, large.	*Projected shade,* none.	*Projected shade,* none.
Posterior Chamber very large. *Uvean circle* slightly or not at all visible. *Anterior chamber* in its normal state.	*Posterior chamber* destroyed. *Uvean circle* very large and very apparent. *Anterior chamber* diminished.	Ditto.
Vision better in a moderate light: seldom wholly destroyed.	*Vision* always entirely destroyed. *Sensation of light* very often obtuse.	*Vision* always entirely destroyed. *Obtuse sensation* of light.

HARD.	SOFT.	LIQUID.
Progress very slow and regular.	*Progress* slow: generally very unequal: sometimes very rapid.	*Progress* very slow and regular: only rapid when the dissolution is advanced.

Before passing to a summary of the "*Complications* of Cataract" (page 539,) I shall give at one view—literally "at sight" and by the impressive medium of contrast—the distinctions between "Lenticular" and "Capsular" Cataracts. I question if any other mode of statement, could better convey more matter with less art?

CHARACTERISTIC DIFFERENCES BETWEEN COMPLETE LENTICULAR AND CAPSULAR CATARACTS.

LENTICULAR CATARACTS.	CAPSULAR CATARACTS.
Opacity spreading from the centre of the crystalline to its surface; or inversely, unless some inflammation has preceded.	*Opacity* spreading from the surface of the crystalline apparatus, and always preceded by an inflammation.
Speck or blemish, grey, green, black, white or amber-coloured; often overrun with striæ which all converge towards the middle of the lens, and are perfectly smooth on its surface, even when they are numerous. In liquid Cataracts the striæ are transverse when the eye is left in a state of repose.	*Colour* always of a dead-white chalky appearance, formed of rough plates reunited without order, and presenting asperities which cause the surface of the membrane to jut out. No regular striæ.
Lenticular Cataract, by degrees usurps the whole of the crystalline.	The capsular remains stationary and is limited; at least if the inflammation does not persist.

LENTICULAR CATARACTS.	CAPSULAR CATARACTS.
Volume very large or very small. Form always convex.	*Volume* small. Form flattened.
Iris moveable or immoveable, without adhesions; sometimes jutting forward or agitated exceptionally by oscillations (*liquid Cataract.*)	*Iris* seldom moveable; often adherent and drawn hackward: never agitated by oscillations.
Projected shadow large, or none.	*Projected shadow* none if there are adhesions.
Vision completely destroyed, or improving in a moderate time. Sensation of day-light sometimes obtuse; most frequently distinct.	Ditto.

COMPLICATIONS OF CATARACT.

Cataract is very often exempt from *complications,* yet the surgeon should turn his best attention to this point. Before undertaking an operation, his business is to examine well, whether the organ is in such a condition that a happy result may be hoped for; and he should study all the morbid complications, direct or indirect, which may cause it to fail—or which ought even absolutely to interdict it. The chief only, need be noted.

Complications should be investigated:

Specks of the cornea, especially when thick and placed near the centre, will trouble the sight after operation, and may even interfere with the orthodox mode of operating. For instance, there is a form of corneal speck in which

Local complications.

an *artificial pupil* becomes necessary, when the opaque crystalline has been removed. Vascularity, even slight inflammation of the cornea, or certain changes in its form;—for example those which accompany incipient staphyloma and hydrophthalmia, should defer the operation. So of thick granulations placed upon the conjunctiva, with chronic *conjunctivitis*, entropion or ectropion though slightly marked, with affections of the lachrymal sac. Carefully examine, especially if Extraction is intended, whether one or more of the eyelashes do not diverge; and if the palpebral edges present scabs or ulceration, as in the disease technically known as "Ciliary Blepharitis."

Plastic exudations upon the iris, if numerous, constitute a serious complication. It then becomes necessary to ascertain if traces exist of inflammation in the internal membranes; for a very sharp inflammation, [super-acute,] almost always accompanies an operation under such circumstances.

False membranes are generally so thick as to be recognised at once. But at times a simple hair-like adhesion between the capsule, and the body or margin of the iris, may cause serious embarrassment to the surgeon, should he operate by EXTRACTION.

Amaurosis: *Incipient, or complete* AMAUROSIS, is a complication as frequent as it is worthy of attention. When paralysis of the retina begins, it is difficult to verify it—some of its symptoms being confounded with those of CATARACT. But when *amaurosis* is complete, sight is extinguished to

such a degree that the patient (who then assumes the peculiar "look" of amaurotic persons,) is no longer conscious of light. It must be borne in mind however, that very large soft Cataracts in certain cases *simulate* amaurosis so closely, that experienced surgeons may be deceived. The pupil is largely opened and immoveable: the iris is pushed forward; and there is no "luminous perception." But attention to the history of the case, [the *commemorative*, as the French term it,] will always enlighten the practitioner. Necessity for circumspection:

Glaucoma is one of the most serious complications, and should banish every idea of an operation. But how, when Cataract is complete, is the existence of this affection to be verified, as its principal characteristic—the glaucous colour—is seated at the bottom of the eye? Nothing is easier, if the symptoms of *choroiditis* be recollected. Numerous varicose patches furrow the conjunctiva, and the sclerotic which frequently exhibits bluish slate-coloured scales, or even "staphylomas." The discoloured iris with its surface newly covered with leaden or wine-tinged spots, is drawn strongly back towards its ciliary ligaments. The *pupil* is unequal, angular, immoveable, and extremely large. Generally pain accompanies glaucoma; or at least pains have announced it, and almost always have a marked intermittent character. For the sake of the diagnosis it is useful to know, that glaucoma often greatly precedes the appearance of Cataract. The *green* anomaly:

Softening of the vitreous humor is a serious complication. It is however less material than the two preceding. The eye-ball is very often softer than in its healthy state; *Ramollissement* of the vitreous humor:

and the iris exhibits remarkable oscillations. EXTRACTION is then contra-indicated. DEPRESSION may be tried; and yet in spite of the precautions which may be observed, almost invariably after this operation, the crystalline (sooner or later) passes into the anterior chamber.

General complications: As to *general* complications, their number is infinite. The chief are rheumatism, gout, syphilis, scrofula, obesity; ulcers of long standing in the legs, especially when they have been healed shortly before the operation.

As to *Ulcers:* WELLER and others think their suppression may produce serious accidents. DESMARRES' observation is confirmatory. He cites the case of a banker at Péronne, a robust old fellow of 68, who came and consulted him in 1843. His right eye was completely "cataracted." The left presented marked opacity. *Personal* examination revealed the existence of large old ulcers on the legs, suppurating profusely. An operation was proposed for the right eye, on the express condition that the "banker" should keep an open account with the ulcers; or in less figurative terms, that he should keep his ulcers open. The man of cash however, would not consent, and DESMARRES in turn stood out for *his* stipulation. Monsieur F—— entered the Royal Hospital of St. Denis, where he got his ulcers—"on account"—*closed!* Whereupon he forthwith had an operation performed on the right eye, but it wasted away! Some months after, he made a sensible but repentant "call" again on DESMARRES—no longer seeing with the other optic. Promising this time to shew deference to good advice, DESMARRES took him in hand, and after putting him upon a strict regimen

Practical case of an obstinate and miscalculating Banker:

with repeated purgation, at the end of six months operated by DEPRESSION. The result, which was satisfactory, is thus stated: "M. F. has now resumed his habits and occupation: his sight is *parfaitement bonne*." (page 541.)

Empirics and empiricisms:

Most gladly would I have gone along with DESMARRES, almost to the letter of every word set down by him in the nine or ten pages which he devotes to an honest comment on the purely *medical* treatment of Cataract; but my limits preclude me from such an indulgence. He well observes that all men of good faith, contemn the cunning device of the "pretended possibility" of curing complete or advanced lenticular Cataract, by means purely medical. Such effrontery is left to audacious and fee-catching quacks, who so impose in various ways upon the credulity of all classes of society. "Electricity," "revulsives;" hocussing "spectacles;" [a man rejoicing in the dashing name of Schlesinger had actually the audacity to "assure" a radical cure, by the use of spectacles alone, of the majority of "alterations of sight"]; (a) and as fitting company with such humiliating records of the weakness of human nature, in the finesse of duping and the infatuation of dupe-ability, DESMARRES instances a delectable specimen of the successful "art" of *Homeopathy*. Of course, its representatives undertook to *cure* Cataract by little doses of their own appropriate medicine, administered internally! DESMARRES with

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(a) SCHLESINGER *Guérison radicale par le seul moyen des verres de lunettes, de la plupart des altérations de la vue!* I decline to advertise the name of the printer, the bookseller, or the place.—H.N.

severe good nature adduces *five* cases from the practice of "docteur Beauvais," (Annales d'oculistique tom. 11. p. 218.)

The "miracles" of Homœopathy:

In one of them, reported by "le docteur Caspari" a woman, aged 36, laboured under Cataract, of six months existence. It appears she had "trichiasis," and varicose vesscls spotting the cornea. In seven days she was cured—by homeopathy—"of all that," except—"sauf, qu'clle voyait comme à travers un brouillard peu epais." The author achieved this, (his own declaration,) by making the woman swallow *a* "drop of cannabis" which did the business for the "brouillard"; and "*one drop of opium*" [Number 6 (!)] which rendered the crystalline "all at once transparent." With cutting mildness, DESMARRES adds, "I forgot to say the 'Homeopathic *doctor*' had *surgically* removed the offending eye-lashes, and does not appear very satisfactorily to have proved that the 'Cataract' did not entirely consist in some *superficial opacities of the cornea!*" (page 543.) Regardless and unscrupulous men, may quote as they please what has been attributed to PUGLIATTI, professor of clinical surgery at Messina, (Sicily) about the "cure of Cataract without an operation." [a] But what do such cases exhibit under the names respectively of a monk or a nun designated as brother "Angelico da Savoca," "Isabella Brazzante," and a third subject of the somewhat ominous appellation of "Gullota?" Every worthy eye-surgeon will admit that under the influence of well-directed *antiphlogistic*

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[a] *Encyclographie Médicale*, June 1846, pages 188, &c.

treatment, some capsular Cataracts, and lenticular ones set up by wounds, may disappear. But candour is one thing: knavery and jesuitical pretence very different.

SURGICAL TREATMENT.

General remarks: *Maturity:*

As a general rule, operation for Cataract should not be performed till the disease has attained "maturity," and where the patient can only distinguish large objects confusedly. Yet there are cases where the opacity having begun at the central part of the posterior surface of the crystalline, we should operate even when the body is not altogether opaque; particularly if the Cataract is double, and patients are in a position of life obliging them to work for their bread. The operation should be done on that eye whose sight is most impaired.

Erroneous ideas:

It was believed formerly, that time alone could bring a Cataract to maturity. This error rested on the notion that the opacity became harder in proportion as it advanced from the period of its formation. GUILLEMEAU and MAITRE-JAN still admitted these ideas. "*Aqua et gutta est*" said the former (speaking of Cataract,) "when it begins to form well, dilating like water; but when it begins to thicken and to die, being more firm, it is called *Cataract*, and by AVICENNA *gutta et obscura*." [A.D. 1610.]

In the October number of the Edinburgh Medical and Surgical Journal, STEVENSON in 1820 proposed always to operate on Cataract, before the crystalline has completely

lost its transparency; because then it will be more easily broken and quickly absorbed. This, says DESMARRES, is another error, for all Cataracts are far from being soft at their commencement: besides, one may often thus compromise what sight remains to the patient. Instead of being raised into a general principle, this rule can only apply to those cases of incomplete Cataract, which by their very slow progress, reduce sufferers to the saddest condition.

How stands the "law?"

OPERATING ON BOTH EYES THE SAME DAY.

Double operation at a sitting.

WENZEL, BOYER, GRAEFE, JÆGER, ROSAS, FORLENZE, FABINI, QUADRI, M. ROUX, used to operate on both eyes the same day; DEMOURS, DUPUYTREN, SCARPA, MARC ANTONY "the little," CARRONS DU VILLARDS, ROSSI, SAMUEL COOPER, MAUNOIR, TRAVERS, &c., preferred waiting for the cure of one eye, before operating on the other. Some, as SCARPA, put off the second operation till the following season. On both sides there is shew of argument. With those who perform the double operation the same day, DESMARRES advances,—1st. That it is dangerous to submit the patient twice to the same accidents; because if at the first operation blood-letting is necessary, there would no longer be the same resource in case inflammation threatened to compromise the eye operated upon the second time. 2nd. The operation done the same day on both eyes, is not followed by more mishaps than that on one eye alone. 3rd. By attacking both eyes, there are two chances of restoring sight, and it is seldom, but that one eye is saved. 4th. If the operations are performed at some distance of

Pros and *cons*:

time, the eye first operated on, gains great errelative force above the other, which is neglected and not suitably exercised. 5th. If we do not succeed with the first eye, the patient's mind gets into the most uneasy condition when the surgeon sets to work on the second: a circumstance singularly detrimental to success.

Those who wish an interval between the operations, equally fail in solid argument. Mishaps, they say, are more serious. Two operations, according to DUPUYTREN should entail graver consequences than one. Frequently all the inflammatory reaction falls upon one eye, and speedily disorganizes it. If you operate by "extraction," you run the greatest risk, says CARRON DU VILLARD, who has frequently seen the eye previously operated on, *empty itself* in consequence of a "sympathetic blepharospasm" at the moment the other is operated upon. To DESMARRES such fears seem exaggerated: he persists in his opinion that when twin Cataract is complete, and objects can no longer be perceived, we should in general operate on both eyes the same day. With a pusillanimous or nervous patient—other things being equal—"extraction" should not be chosen, because it may be followed by the accident noticed by CARRON. With all other patients it may be avoided by dexterity and proper management. Twin Cataract.

The rule of the double operation the same day, is not however absolute. There are individual cases in which the operations should be by *different processes*, and at some distance of time. For instance, if DEPRESSION is practised on one eye, and EXTRACTION on the other, we Circumstances alter cases:

Twin-Cataract: should wait till symptoms of inflammation in the first have subsided, before operating on the second. And why? Because accidents peculiar to one method, may, by thwarting the treatment indicated for the other, vexatiously compromise the result. DESMARRES saw a hospital surgeon in Paris perform extraction on one side and depression on the other. Vomiting came on in the night, and the operation failed. Nevertheless AMUSSAT, after the example of WELLER, operated similarly for twin-Cataract, and obtained happy results.

SEASON.

Temperature of less consequence than the "general health": Many attach great importance to choice of season. Others see no inconvenience in operating at all times of the year; and with the exception of periods of excessive heat, such thinkers are in the right. Damp and cold DESMARRES fears very little. He declares he has never seen temperature exert any serious influence on the result of the operation. The only rule to be followed is to operate when the general health is in the best possible state.

AT WHAT AGE OF THE PATIENT TO OPERATE?

As to age: Infancy, extreme age, the "dodging days" among women, have been deemed contra-indications to any Cataract operation. The climacteric age alone, seems proper to be regarded, and that only within limits. It is more prudent to wait till the general health is good. Old age is only very rarely a cause of unsuccess, when the eye is otherwise healthy. Examples of Cataracts operated on

"centenarians," are sufficiently numerous not to leave a doubt on this point. In 1845, DESMARRES operated on a man aged 89, and his sight was perfectly restored. As for infants with congenital Cataract, there is no inconvenience in operating on them when they are twelve, fifteen, or eighteen months old. Old and young:

PREPARATION FOR THE OPERATION.

It has been acknowledged for some time, that recourse to "preparatory treatment" is useless, in operating for Cataract, where it is neither simple nor owing to inflammation imperfectly exterminated, nor to some general malady. In these latter circumstances, the patient should undergo appropriate treatment for the removal or mitigation of complications. General or local bleeding, repeated purgatives, prolonged repose, vesicatory applications to the nape of the neck, appear useless if patients are in a fair state of health. Blisters, by depriving the afflicted of rest and by the pain they occasion, are hurtful expedients, and even dangerous when operating by EXTRACTION; because they preclude the tranquillity then so essential. However, when those afflicted with Cataract are plethoric, or accustomed to good cheer, or subject to congestion in the head, it is wise to enjoin a less abundant and less rich diet; and to "let blood." In other respects, some days "regimen" will not hurt; and it will be well, according to DESMARRES, to prescribe to "old women" [of both sexes,] a purgative, to unload the intestines. The abuse of irritants: especially of Blisters: Unload and regulate the lower bowels, which old people generally neglect:

When we operate towards the middle of the day, the

patient may take some light nourishment early in the morning. With those accustomed to "café au lait," DESMARRES found the necessity of not changing the habit, because if so they are generally seized with headache which clings to them the whole day.

The French mode of "rehearsing" the operation, previous to its actual performance:

When we have to deal with restless, pecvish, or pusillanimous sufferers, or young children, it is advantageous to accustom the eye to contact with the instruments for some time before the grand day of operation. This practice, where CHLOROFORM or *æther* may be objectionable, will certainly tend to prevent the eye becoming so violently agitated in the orbit, and from concealing itself under the upper lid, when the deed is done in earnest. Several recommend, simply touching the eye-lids with a blunt metallic body, persuaded that the sensation of cold is the chief cause of the undue movements of the organ. DESMARRES does not confine himself to such preparation only. The upper eye-lid being held up by an assistant, he touches the eye-ball several times with an ordinary blunt stylet, on the very spot where the puncture is to be made. The most nervous ladies soon accustom themselves to the disagreeable sensation incident to the contact of the instrument—thereby getting rid of a twofold cause of failure:—namely, the perturbed movements of the eye, and the nervous fainting so frequent among patients of this impressible constitution. DESMARRES congratulates himself for having even lately submitted a lady to this sort of *rehearsal,* who some months before, rose briskly the moment she felt the cornea pricked, and then flatly refused the operation. (p. 556.)

The inhalation of *chloroform*, equally obviates all such unpleasantness to the sufferer and embarrassment to the operator, as I shall explain, according to promise, before I bring this summary to a close. Chloroform:

MODES OF OPERATING.

When this method is chosen, the object is to cause the disappearance of the opaque crystalline from the field of vision, but leaving it in the eye. It is attainable in several ways. 1st. It is plunged into the inferior part of the ocular shell by *depressing* it directly from top to bottom; or by turning it over from front backwards! *(Reclination.)* 2nd. It is divided into as many parts as its density permits *(Breaking.)* 3rd. It is submitted to the dissolving action of the aqueous humor by depriving it of its capsule. *(dilaceration of the capsule.)* Depression—Breaking of the Cataract: Dilaceration of the Capsule.

Depression, breaking, and *dilaceration* of the capsule, may be performed by penetrating the eye through the sclerotic: or through the cornea. For study, these processes may be classed thus:—

Classification:

Scleroticonyxis.	A.	Depression of the Crystalline.
	B.	Breaking of the Crystalline.
	C.	Dilaceration of the Crystalline.
Keratonyxis ..	A.	Depression of the Crystalline.
	B.	Breaking of the Crystalline.
	C.	Dilaceration of the Capsule.

DEPRESSION OF THE CATARACT.

Sclerotico-nyxis: its antiquity:

This invention dates from the remotest antiquity. PETIT thinks "depression" by the sclerotic was known in Egypt under the reigns of PTOLEMY-SOTER and PTOLEMY-PHILADELPHUS, with whom HEROPHILUS and ERASISTRATUS were contemporaries. It appears from CARRON DU VILLARDS that traces of it are found in the most ancient traditions of Hindostan and the Chinese empire. GALEN states that in his time there were oculists at Rome, as at Alexandria, who exclusively practised this operation. CELSUS describes it with great care in the seventh chapter of his seventh book. From that time to the 17th century, it remained in the hands of tramping oculists, and then underwent important modifications after KEPLER demonstrated that the crystalline was not the *organ* of sight, but merely fulfilled the office of a lens.

Variations:

The modifications of processes for DEPRESSING Cataract, are almost endless. Here my limits shut me out from amplification. Besides, practically, it would not be rewarding: the play I fear would not be worth the candle. I concur, therefore, with DESMARRES, in pointing the curious to the second volume of the work of CHELIUS, which we now have in an English dress, and also to page 112, &c. of DEVAL'S work, for details. DESMARRES has a favorite mode of operating which well merits notice; also that devised by CUNIER.

Desmarres' process by Depression.

Desmarres' process—What? and where specially applicable:

It is chiefly applicable to cases of demi-soft lenticular Cataracts, in which for overruling reasons EXTRACTION is impracticable. Cataracts of this kind, because of the swelling they would undergo in the aqueous humor, (after "depression,") occasion *iritis* and internal inflammations which often baulk the result of the operation. In DESMARRES' mode by "depression," issue is first given to the *aqueous* humor. If inflammation comes on, this liquid is without difficulty again made to emerge, and thus there is an expedient always easily opposed to swelling and internal inflammation of the eye. The manœuvre is easy with an ordinary lancet and stylet. Particular instruments are unnecessary. In hard Cataract this process has often been substituted instead of that by ordinary depression. Recourse has also been had to it to break Cataract, and above all to dilacerate the capsule.

Instruments in Desmarres' operation:

Instruments.—A lancet-shaped knife a little narrower than BEER's, or a simple lancet: a spatula or needle with its end formed spoon-ways [like an ear-picker:] or an ordinary stylet, when the Cataract is hard.

First stage.

The eyelids being withdrawn, the surgeon with a lancet-shaped knife, punctures the sclerotic transversely, four or five *millemètres* from the cornea. (a) The little wound about four millemètres long, is placed below, and some-

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(a) A *millemètre* is equal to very nearly a *twenty-fifth* part of an English inch.—H.N.

times above a line which, extending from one angle to the other of the eye, divides the organ into two halves. Division of the ciliary arteries, which would cause internal hemorrhage, is thus avoided. The instrument penetrates the globe, and at a stroke cuts all the external membranes. When the puncture is made, the operator withdraws the instrument: the assistant also frees the lids—an instant of repose being allowed the patient.

2nd Stage. The eye-lids wiped and again held, the surgeon handles the spoon-pointed needle like a pen, and inserts it cautiously into the wound in the sclerotic, and conducts it between the iris and the capsule, in front of the Cataract. If the spatula in question, and not an ordinary eye-needle is used, care should be taken while it passes through the wound, to turn the convexity upwards, and by a rotary movement on its axis, to place the concavity in immediate contact with the Cataract, exactly as in ordinary DEPRESSION when a convex needle is used. Movements, accompanied with pressure, are then employed from the top downwards and from the front backwards on the crystalline, which is drawn along in this direction.

3rd Stage: The crystalline having already undergone decided depression, is drawn down below the pupil and laid flat; the anterior aspect upwards, as in the third stage of depression by reclination.

Eight cases have thus been operated on, by DESMARRES (p. 580.) One, in his hospital during a visit from WALTHER and CHELIUS junior, was examined by them. The alleged advantages in this "exceptional pro-

ceeding" are :—1st. Easy manipulation. 2nd. Impossibility of wounding the iris. 3rd. Swelling of the crystalline not so dangerous; and inflammation of the internal membranes consequently more rare. 4th. Extreme facility of performing *paracentesis*, by means of the wound in the sclerotic, when iritis comes on. 5th. No vomiting. 6th. No extraordinary or peculiar instruments. Advantages:

The *drawbacks* most candidly stated by DESMARRES himself, are :—1st. Internal bleeding from wounding the ciliary vessels. 2nd. Escape of part of the vitreous body when it is soft. 3rd. After the cure, trembling of the iris, to a greater extent and more frequent, perhaps, than after operations by the needle. Disadvantages:

CUNIER's mode of operating is described in the *Annales d' Oculistique* (vol. xii. for August, 1844) by de Abreu. It is ultra-technical, and though to some on that account, it may read as irksomely minute, it nevertheless deserves clinical consideration. The finical manner in which parts of an instrument are described to a "diameter of half of the twenty-fifth part of an inch" may be allowed for, by English surgeons—who taking the nearest way to PRACTICALITY *in all things*, discard the husk and shell as superfluous in description, in their impatience to get at the kernel, and are thereby apt unreasonably to forget the turn of mind of their continental brethren. Besides, the eye being a nice and narrow field of action, there are instruments for particular operations, which if approved of, and adopted from French practice, can scarcely be too accurately described. Therefore, without further apology, I transfer a page or so, of ABREU's article, as on record :— CUNIER's process:

Cunier's process:

"The handle of the needle used by CUNIER has a total length of ninety-six millemètres. It is octagonal. The four large surfaces are three millemètres wide; the four little ones, two millemètres. The steel is twenty-one millemetrès long. Throughout its extent, as far as the beginning of the blade, it has a diameter of half a millemètre. At the distance of a millemètre and a half from its beginning, is a circular button analogous to that seen on the needles of LANGENBECK, HEUERMANN, &c. At eighteen millemètres the blade begins. This, cutting both ways, one millemètre wide in the middle, presents in its concavity a longitudinal ridge which in this part gives it a thickness of a demi-millemètre. Its curve offers a length of three millemètres, on a radius of a millemètre and a third.

CUNIER holds the needle like a writing pen; the thumb, fore-finger, and middle-finger half bent. The little finger on the zygomatic arch, furnishes the point of support. The instrument is held at an angle of fifteen or twenty degrees with the horizon; the point two or three lines from the globe; the convexity turned upwards, the concavity downwards. The patient is made to bring the eye downwards and inwards; and fixing his attention by some question which should interest him, the fingers which hold the instrument are suddenly extended, (using the needle as a harpoon) the point of the blade is buried in the sclerotic three lines from the border of the cornea, and half a line or more below the right superior muscle. The hand then describing an arc of a circle, twenty-five or thirty degrees upwards, the instrument is pushed up to the collar of the blade, in the posterior chamber. Then give the needle a demi-turn on its axis from within outwards, which brings the concavity above—the convexity below. The convexity is thus placed upon the superior posterior edge of the crystalline. This is depressed until below the pupil, its posterior face becoming superior, the anterior inferior. In effecting this operative measure, the needle receives such a movement that the crystalline becoming flat, is laid on the concavity of the blade. Then recommending the patient to look upwards,

the lens is placed, by the effect of this movement of the globe, in the inferior and external part of the vitreous body.

"When the patient does not perform the movement desired, the handle of the needle carried obliquely forward, compensates. The *capsule* very often follows, which makes the depression take place in a mass. Where it does not follow, and whether opaque or not, the surgeon after operating by depression, uses the needle as a hook, harpooning this membrane in two or three places successively; then twirling the needle between his fingers, he operates by laceration. The needle is withdrawn by the direction it took when entered." (p. 582.)

To the foregoing, seven cases are appended; making in all twelve operations *à la* CUNIER. On the authority of DE ABREU nine were completely successful: two demi-successful: one a failure. GUEPIN in a letter to DESMARRES reports that the professor at Nantes has tried *Cunier's* process, with the best results.

I now approach points of very great interest to the eye-surgeon, as will be at once recognised by their mere enumeration, viz:—

SUMMARY OF REMARKS,

ON

I.—*Dilaceration of the Capsule.*

II.—*Keratonyxis.*

III.—*Extraction by the Cornea*—KERATOMY.

IV.—*Sketch of the advantages and drawbacks, of several methods.*

V.—*A tabular synopsis,* of

1st, *Accidents which may occur in the operation of Keratomy;*

2nd, *Their causes;*

3rd, *How to avoid, and*

4th, *How to remedy them.*

I. DILACERATION OF THE CAPSULE.

This operation, though apparently simple in execution, requires many precautions. When the puncture is made, the opening being larger than in the other processes, the aqueous humor escapes with subsequent softening (slight) of the eye, throughout. The hook must be conducted with skill; if not, it will next to a certainty graze the internal membranes—especially the vitreous body and the iris,—and push the back of the crystalline, which then tends to *turn* on its vertical axis. To avoid these "breakers a-head," the operator must not for an instant abandon the point of support which he should have taken on the patient's cheek. Above all, he should attentively follow the eye in its various movements, *which are sudden, and always very rapid.* DESMARRES is earnest about a difficulty, not met with in operations where a needle can be passed through the sclerotic without a large puncture having been previously made. In operations where there is only a simple prick in the fibrous substance, the eye is fixed by the immobility of the penetrating instrument. Whereas, in dilaceration of the capsule, the eye is free to direct itself to all parts when inserting the hook into the wound of the sclerotic. Another inconvenience (specially) is when the wounds in the capsule are made by the

hook, the capsule when opaque and thick is dragged along, thereby occasioning disturbance of the crystalline, or a partial *déchatonnement;* the lens being then seen wavering behind the pupil. But this drawback (avoidable by substituting a breaking-needle for the little hook,) is more than counterbalanced by the unspeakable advantage of being able *(when we wish)* to OPEN THE WOUND IN THE SCLEROTIC. For years in my practice, I have been fully alive to this great point with reference to the operation under consideration. Until the recent publication of DESMARRES' views I had, need I say—no opportunity of adducing his experience, which is here especially, as on many other points generally, in complete accordance with my own. [a]

Review of *Pros* and *Cons:*

By having it in our power, at once and at any time, to inspect the state of the conjunctiva, and as particularly in the present operation to *open* without danger *the wound in the sclerotic,* what are the advantages? "The most violent signs of inflammation may thus be made to disappear in an instant, along with the aqueous humour, and immediately chase away the most intolerable pains." DESMARRES has found it so, again and again, and cites two cases (pp. 586–589,) previous to which he wishes it to be remembered that he expressly reserves *dilaceration*

Inspection available at any moment:

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[a] My note on the text of STOEBER was written before I had the satisfaction of perusing DESMARRES' work now under analytic notice. What I have said [see page 56 *ante*] on a correlated subject, is of material consequence in practice; and hence a more amplified *illustration* of the reasons for its inculcation, which as a rule of practice should be extended, is gone into, as above.—H.N.

of the capsule to cases alone, in which severe inflammation has long existed and produced numerous adhesions between the iris and the capsule; so that *extraction* would only be possible by dividing the iris over a great extent:—"a circumstance offering as much danger as difficulty." And as to *depression*, "admitting there is any way of breaking the posterior synechies," that process "would infallibly revive the old internal inflammation, and risk compromising the eye."

II. KERATONYXIS.

Revivals:

Depression, whether by the cornea or by the sclerotic, is an operation of very great antiquity. Traces of it exist in the writings of the Arabs. It went completely asleep till the experiments of CONRADI, BEER, BUCKHORN, and LANGENBECK, again awoke it.

I think it unnecessary to occupy space by dwelling on subordinate "inventions" and the pet modifications by a succession of surgeons, whether as regards knives or ways. An extensive levée might be held. But among the distinguished, I may confine the list, in addition to those already presented, to SIEBOLD, REISENGER, WALTHER, DUPUYTREN, and JUENGKEN. CHELIUS too, in his work on surgery, has gone into greater detail on the merits of the needle, than DESMARRES. Similar comments are applicable to the modified niceties and favorite resources of HEISTER, WELLER, CARRON DU VILLARDS, and ROSAS, in respect of *breaking*—an operation beset with more difficulties by the cornea, than when

effected by the sclerotic. With an allusion to what is technically known as "*discision* of the capsule," and to JAEGER'S mode of practising *dilaceration*, I pass to a summary of general

REMARKS ON KERATONYXIS.

Summary as to *Keratonyxis*:

Keratonyxis is anything but of easier execution than scleroticonyxis. It is thought, it should only be retained for very peculiar cases as exceptions. Even by those who have preferred it to every other method, it seems it has for some time been all but "left off" in Germany. In France, on the testimony of DESMARRES, scarcely any one but B. ST. HILAIRE now practises it as a general method. Keratonyxis is only indicated when the eye is very small and much sunk in the orbit, as with infants labouring under congenital Cataract. Yet among all such, it is sheer prejudice to suppose, that it cannot be superseded: for instance by sclerotical DEPRESSION.

Difficulties:

The difficulties besetting this operation are easily stated. For example —

1st. The NEEDLE cannot be directed with facility, when imprisoned within the tissue of the cornea:

2nd. Its circular movements are very restricted, because *limited* by the pupil:

3rd. Its movements backwards and forwards are sufficiently difficult of execution; especially, if as frequently happens, the crystalline has any tendency to pass into the anterior chamber:

4th. Its oblique movements, are extensive enough. True, but in this case, the manipulator of the needle is

worse off, than an ordinary tailor proverbially is when without "elbow room." Where is the eye-surgeon's *point of support* when fumbling with the *needle* by KERATONYXIS? He would command one, would he not?—by operating by the sclerotic, and particularly if by my favorite mode, *reclination.* (a)

Disadvantages:

Again, suppose the pupil contracts—an every-day occurrence in needle-operations—the manœuvre cannot be properly completed. If your patient recoils, away comes the needle from the cornea—perhaps dragging the lens into the anterior chamber: the operation is floored; at least it "sticks up," because the instrument cannot be introduced a second time as in Scleroticonyxis. Besides, without the unfortunate patient being at all to blame, this accident may happen if the surgeon (by reason of movements of his hand, interposing between his eye and the object on which he operates,) loses sight *for a single second* of the blade of the instrument! Here we have goodly objections.

Keratonyxis has other disadvantages. The chief are:—

1st. The crystalline is oftener pierced than by *scleroticonyxis:*

2nd. It falls more easily into the anterior chamber:

3rd. It is less deeply displaced than by acting on it laterally:

(a) In my hospital practice alone, I have performed the operation of Reclination, at least *five hundred* times with gratifying success.—H.N.

4th. It also oftener remounts into the pupil, not only afterwards but during the operation, let your efforts be what they may to remove it:

5th. The capsule is divided with greater difficulty: its broken pieces float into the posterior chamber; and those which were in conjunction with the rim of the crystalline, are not reachable.

What does such a catalogue of drawbacks which I have thrown into an appealing programme from DESMARRES,— what I ask does it point to? Does it not assemble all the conditions regarded as most conducive to *secondary* Cataract? If bridles exist between the iris and the capsule, the operation is more difficult than by the sclerotic. It is only with infinite difficulty that they can be divided without the escape of the instrument from the cornea. Nor is the list of objections done:—As soon as one of such bridles is touched the pupil contracts, and what becomes of an operation, which there is no practicable means of continuing! Moreover, nervous and inflammatory sequels are as frequent as in scleroticonyxis:— The *iris* is oftener wounded:—the cornea sometimes presents an opaque cicatrix at the place where the puncture has been made; and well therefore may it be ironically said, when such an accident occurs, "it will well redeem the pretended advantage that was obtained, of only finding one membrane to traverse, instead of several." (p. 595.) Reflections:

III. EXTRACTION.

Its purport: The object of this operation is the direct and literal ejectment of the crystalline opacity; the bulb being cut into, either by the cornea, or by the sclerotic.

Extraction by the Cornea: *Keratomy.* Extraction by the cornea is anything but a new process. It was known to the "faculty" of the most primitive ages. RHAZES, is an authority that Cataracts were extracted by ANTYLLUS and LATHYRION, two "old worthies" who flourished as early as the first century. It is also declared by Avicenna that the operation was known to ALI ABBAS, surnamed "THE WISE."

The WEASEL operation: ABULKASEM, "having found it something dangerous," tried (after the manner of a weasel with eggs,) to extract Cataract by *suction!* This statement may occasion surprise to some who may be of the ANDREW MARVEL order of men; but it will be but momentary, when the fact is more generally known, that the weasel operation is the method chiefly employed by the Illuminati in Persia, and consists literally in *sucking the Cataract with a hollow needle,* just as sailors on every sea are reported to proceed when on a particular cask with a tube or a straw in mouth they perform their favorite nautical operation of tapping the Admiral.

The *geography* of operations for Cataract, would constitute a curious and interesting chapter in its history.

After falling into oblivion for a very long period,

extraction was again resorted to by FREYTAG towards the close of the seventeenth century. After incising the cornea, he extracted the Cataract with a hooked needle. But it was again forgotten till ST. YVES and PETIT (1707–8,) and DAVIEL (exactly one hundred years since) extracted the lens, after depressing it into the anterior chamber. The two former seem to have missed the importance of their operation; but DAVIEL had a quicker perception, and to him belongs the honor as a Frenchman, of bringing into vogue a mode of extracting the crystalline through the cornea. (a) But his process, too, was speedily modified. LAFAYE, WENZEL, RICHTER, BARTH, BEER, &c., &c., all had a turn at it. The last three able men, caused the adoption of the knives which are most generally in use now. The modifications on Daviel's method are endless. They affect not only the size, direction, point of the incision, manner of opening the capsule and extracting the opaque lens, but also the tools used in every step of the operation.

Historical outline of the process.

Extraction by the cornea may be executed in three ways. As the membrane is slit, either on the lower, or on the external side, or on the upper part, it takes the name of *inferior keratomy, oblique,* and *superior.* There is a recent alteration which apparently promises to work well, in which the cornea is opened with a *knife-needle:* a form of instrument a long time disused, but again in its turn brought up from "down among the dead

Revival of the knife-needle

(a) Memoirs "de l'Académie de Chirurgie. Tom ii, page 337, 4to edition, 1753. [Oftener quoted than read.—H. N.]

men," to receive the praises of its resuscitators. CUNIER in particular eulogises the *couteau-aiguille* as destined to play a "*grand rôle*" in the contemporaneous history of extraction. He even goes further, but unless it (the knife-needle,) undergoes some additional modification, DESMARRES questions, if (as CUNIER predicts,) it will "completely supersede" the knife of RICHTER.

IV. SKETCH OF THE ADVANTAGES AND DRAWBACKS OF SEVERAL METHODS.

I.—Lower Keratomy.
II.—Oblique Keratomy.
III.—Upper, or superior Keratomy.
IV.—Other processes; *ex. gratia,* of ALEXANDER, of GUTHRIE, and of NEILL.

Clinical considerations:

The following modes of operating for the removal of Cataract, have their advantages and drawbacks. For instance:—

I.—*Inferior* keratomy, presents a great advantage in *execution;* but unfortunately it is more than counterbalanced by the sèrious inconveniences of the result. The lower half of the cornea is easily brought into view by depressing the lower lid; but then we have to fear not only an escape of the vitreous humour, but *procidentia iritis* as well. And if not watched, the lower eye-lid, by orbicular contractions, is apt to become entangled in the lips of the wound, even after the eye has been dressed.

The wound is moreover in an unfavorable condition for re-uniting. Why? Because it bathes in the tears of the lower conjunctival cul-de-sac, and thereby an inconvenience is produced which may cause *suppuration of the entire globe.* Suppuration to be dreaded:

II.—*Oblique* Keratomy, is rather more difficult. It certainly requires more experience on the part of the surgeon. The direction of the knife demands greater knowledge and practised steadiness of hand. If the puncture is too high, the projection of the orbit interferes with a due preservation of the required path of the instrument; and should the operator—after having made the puncture—hesitate ever so little, and the patient roll the eye-ball upwards—we have two casualties: the *aqueous humour runs out along the knife,* and the *iris is wounded.* It does not say much in palliation for this operation that the accidents specified become rare, or very rare "*avec un peu d'habitude*" as DESMARRES somewhat apologetically remarks. It is true that "*practice,*" as the copy-books say, "makes perfect," but it can only do so to the cost of an army of martyrs, in the sense which a well-known English surgeon conveyed by his significant phrase "putting out *a hatful of eyes.*" Mere *practice,* or "un peu d'habitude" would no doubt *(in time!)* enable a steady coal-heaver or a nimble dustman, after *putting out* a "hatful of eyes," to equal if not surpass any other irregular or uneducated pretender, practising on public credulity. But when men conversant with the structure of such a nice and important organ of sense as that of the EYE, and by special education and observation aware that all operations are not equally objectionable or mere matter Dangers attendant on oblique Keratomy:

Clinical objections:

of *taste* as to rational preference :—when, I say, these and other points are taken into consideration, is it not the duty of right-minded and judicious men, to indicate with unsparing reprehension every drawback which EXPERIENCE has disclosed against this or that operation; and more particularly where, as in the present instance, there is a sufficiently wide margin for judicious choice? There are positive drawbacks to *oblique* keratomy; and per contra it has advantages which "*inferior* keratomy," when weighed against it, does not possess. Objectionable on the one hand, as the oblique operation is, yet as fairly stated by DESMARRES, it is preferable to "*inferior* keratomy," inasmuch as the middle of the wound turned to the external side, is not fretted by the lower eye-lid, and does not bathe in tears. Moreover the cornean wound, entirely covered by the upper eye-lid, re-unites with more promptness. In addition, the knife, directed obliquely from top to bottom, and from without inwards, wounds neither the nose nor the caruncula lachrymalis—as may happen in "keratomy inferior;" and should the eye-ball hide in the great angle, the counter-puncture is not so difficult of execution as when the wound is made from below.

Exceptional cases:

Of the three processes of extraction by the cornea, in spite of the drawbacks noted, "oblique" keratomy, is most *obliquely* preferred by many who only have recourse to the inferior incision in exceptional cases; as where there is considerable projection of the orbit—the palpebral opening narrow,—and the globe all but flat, or little projecting.

III.—*Superior* keratomy, contrary to the lower method, is characterized by the greatest inconvenience in execution, counterbalanced however by the greatest advantages in result.

Upper Keratomy.

The section of the wound presents real difficulties. The eye naturally flies upwards and inwards, which compels the operator, after the puncture is made, to *fix* it by pressure; and however gentle the pressure is, from top to bottom, it must be adequate. The upper eye-lid is also apt to be wounded. When the eye is very restless, the keratome may have to be withdrawn, and the section has then to be cobbled and finished with some other instrument.

Advantages:

On the other hand, and taking a judicial view of all the points before us, the advantages of this method are many:—

1st,—The opening of the cornea being at the top, the aqueous humour does not flow out so easily, at least totally.

2nd,—The wound, supported by the upper eye-lid, is in the best condition for re-union.

3rd,—It does not bathe in mucus and tears, and *cannot* be removed by the eye-lid as in inferior keratomy.

4th and lastly,—*Procidence* of the iris, is less to be apprehended should the sufferer have an attack of cough or vomiting, or strain under hiccup, or while micturating, or when at the water-closet.

Of these three processes then, thus summarily reviewed, the last offers the greatest advantages with the least material drawbacks. Desmarres adds, c'est par conséquent celui auquel le Chirurgien doit surtout l'exercer.

The processes of Alexander, of Guthrie, and of Neill.

But there are other processes, for instance of GUTHRIE and ALEXANDER, and my own, described further on.

IV.—ALEXANDER and GUTHRIE's method can be performed without an assistant. The patient keeps his head turned backwards on the support of an arm chair. The surgeon, mounted if necessary on a little stool, stands behind him. Suppose the *right* eye under operation, the upper eye-lid is kept raised with the left hand, and the right holds a very narrow Cataract knife with which the incision is made. The section is not completely finished at the first stroke: the operator leaves a sufficiently ample space between the wounds of the *puncture* and of the *counter-puncture*. The knife is then withdrawn, and in its place a bent needle is installed with which the capsule is opened. The needle in its turn is withdrawn, and when the contraction of the eye has wholly subsided, it is replaced by a blunt keratome, (like a small pen-knife,) by which the section of the cornea is finished. The Cataract is then extracted in the ordinary manner. With other advantages, this method dispenses with an assistant;—avoids the sudden emanation of the crystalline, and does not expose it to the middle parts of the eye. GUTHRIE and ALEXANDER only use it in superior keratomy.

DESMARRES has tried it several times in oblique and inferior keratomy. He says he was first led to it by chance. He operated upon a "pusillanimous man" whose optics were perhaps slightly too prominent. The muscles energetically compressed the globe. He felt his knife pressed to such a degree within the cornea that he dreaded, in the event of terminating the wound, that the

middle parts of the eye would come out with the lens. The instrument was withdrawn after having uselessly waited for the disappearance of the muscular spasm. Upon the eye calming, the little bridge separating the two wounds in the cornea, was divided by a blunt pointed bistoury which he opportunely spied in his box of instruments. In this way the serious accidents which were imminent, were avoided. Since then, every time DESMARRES has met with a similar spasmodic state of the muscles during the division of the cornea, the knife has been withdrawn from the eye—and the process of GUTHRIE and ALEXANDER, followed from point to point. He declares, he has found by experience, that it is the surest method of preventing the exit of the vitreous body.

V. TABULAR SYNOPSIS OF ACCIDENTS AND REMEDIAL MEASURES, IN THE OPERATION OF KERATOMY.

Table of Accidents:

As illustrative of the accidents which may occur in *keratomy*, the following TABLES which I textually translate from DESMARRES, convey a whole history. I question if many chapters, or even entire treatises in any language, present as much suggestive and admonitory information as with regard to keratomy is brought within the compass of the following *eight pages*.

To the young eye-surgeon, the synopsis will be found invaluable as an epitome of study; and to an "old hand," a very available refresher.

SYNOPTIC TABLES OF ACCIDENTS IN KERATOMY.

STAGES AND SUB-STAGES OF THE OPERATION.	ACCIDENTS.	THEIR CAUSES.	MEANS OF AVOIDANCE.	HOW TO REMEDY THEM.
	A.—*Accidents which may happen during the operation.*			
First Stage: PUNCTURE	Entanglement of the knife in the lamellæ of the Cornea.	Puncture too oblique.	Fix the eye with the fore-finger, or by an instrument, and traverse the anterior chamber parallel to the iris.	Withdraw the knife and recommence the puncture immediately, or later—according as the knife has more or less ploughed up the lamellæ.
	Wounding the iris, ciliary body, capsule and crystalline, with effusion of blood into the two chambers. Exit of the aqueous humor when the knife is brought back in a direction parallel to the iris.	Puncture not sufficiently perpendicular to the iris.	Traverse the anterior chamber parallel to the iris.	Rectify the knife, trying not to open the lips of the wound. Finish the section, and have recourse to suitable antiphlogistic treatment.
	Wound too large or too small.	Puncture too high or too low; too near or too far from the sclerotic.	Fix the eye, and proportion the size of the wound.	Make the counter-puncture lower or higher; or if the wound is too large, after having made the counter-puncture incline the knife forward; incline it backward if it is too small.
	Wounding the sclerotic:—division of vessels of the conjunctiva of the bulb:—blood in the anterior chamber.	Puncture too near the sclerotic.	Fix the eye.	With the scoop or nippers remove blood from the anterior chamber, if there is much. Otherwise leave it for absorption.—Continue the operation.

	Difficult and sudden introduction of the knife, and consequently injury to the membranes, and puncture badly made.	Bad quality of the knife.	At the time of the operation, satisfy yourself on a bit of fine sheepskin that the point of the instrument is sharp and tempered.	According to the severity of unexpected injuries, pursue or interrupt the operation.
Passage of the knife into the anterior chamber.	Premature efflux of the aqueous humor, and wounding the iris.	1st.—Hesitation in the progress of the knife. 2nd.—Exit of the instrument before the counter-puncture is made.	1st—Traverse rapidly the anterior chamber without using pressure forwards or backwards, and only stop after the counter-puncture is made. 2nd—Try to obviate sudden movements of the eye and head.	Abandon the operation if the greater part of the iris hitches under the knife; and if after waiting some instants the diaphragm is not seen to *move back* from the cornea by the reproduction of the aqueous humor. Execute the counter-puncture without hesitation, should a small part of the iris be alone engaged.
	Blade of instrument suddenly inclining forwards or backwards, and parallelism destroyed between the blade and the iris.	Bad direction of the knife.		Take care before the counter-puncture is made, to rectify the bad direction of the knife, in case of causing efflux of the vitreous humor.
Contra-puncture.	Place of counter-puncture hid from the sight of the operator.	Flight of the eye, although fixed by the middle finger.	Fix the eye with a claw-ring, or with Pamard's pike. [But revert to my Note *ante*, at pp. 30-31.—H.N.]	Wait some instants till the eye rights itself. If it remains moveable, resolutely continue the incisions, always conducting the knife parallel to the iris: or lastly, if the contra-puncture be not possible, withdraw the instrument and enlarge the incision with scissors.

STAGES AND SUB-STAGES OF THE OPERATION.	ACCIDENTS.	THEIR CAUSES.	MEANS OF AVOIDANCE.	HOW TO REMEDY THEM.
	Premature escape of the aqueous humor, and engagement of the iris under the knife.	1st. The *Keratome* opening the lips of the wound by a slight rotatory movement upon its axis. 2nd. Pressure awkwardly made (by the operator) on the lips of the wound. 3rd. Muscular efforts.	1st. and 2nd. Follow the movements of the eye, holding the knife lightly and conducting it with precision. 3rd. Try to obviate all causes of muscular effort.	If the counter-puncture is made, stem the diaphragm with the blade of the instrument, pushing it into the anterior chamber. If not made, proceed as indicated for *premature escape of the aqueous humor during the passage of the knife through the anterior chamber*. [See fifth column of table, page 141.]
	Difficulty in causing the exit of the knife from the anterior chamber. Point of instrument breaking in the eye.	Hardness of the cornea, or weakness of the point of the knife.	Prove the [*temper* of the] point on a bit of fine sheep-skin.	Apply the nail of the middle finger to the cornea, and if in spite of this support the point cannot pierce the membrane, with another knife make a prick at the place of the counter-puncture. Should the point of the instrument break, leave it in the eye for absorption, unless its extraction be very easy. [I shall remark upon this. Enough here, that such "absorption," never occurs.—H. N.
	Wound too large or too small.	Counter-puncture too high, or too low forward; or unduly backward.	Fix the eye.	Should it appear that the wound will be too large, before pushing the instrument very far, redirect the blade strongly forward. Incline it on the contrary backward when finishing the incision; or else lengthen the section with a histoury, if the wound is too small.

	Wounding the sclerotic and the conjunctiva of the bulb.	Contra-puncture too backward.	Fix the eye.	Continue the operation, redirecting the blade of the knife forward.
Completing the wound.	Wound square.	Distance with relation to the sclerotic badly preserved, and incision made at once by the base and point of the knife.	Act slowly, and watch the progress of the instrument.	
	Escape of the vitreous body, with or without the crystalline.	1st. A rapid incision of the last bridle [or frœnum] while the eye is agitated. 2nd. Pressure awkwardly made on the organ by the knife, the fingers of the operator, or by those of an assistant.	Act slowly. To finish the incision wait till the muscular spasm has subsided, and if both eyes are operated on, leave the last bridle of the first intact, till the moment of extracting the crystalline.	Depress the eyelid in front of the wound. Turn back cautiously the head of the patient: conduct him to bed, and when the spasm is over, cut with blunt scissors the parts of the vitreous body which have escaped from the anterior chamber. Then try to reduce the hernia by giving the head one or two sudden jolts.
	Wounding the caruncle, the conjunctiva, or the nose. Venous blood impeding the manœuvre, and sometimes penetrating to the anterior chamber.	Flight of the eye into the great angle.	By pushing the knife into the internal angle, by inclining the handle towards the temple of the patient and *thus* bringing back the eye to the centre of the orbit.	Cause the blood which is effused between the eye and the lower eyelid to emanate. With the scoop dis-embarrass the pupil if it is hid. Then continue the operation as usual. If there is only a little blood in the anterior chamber, let it alone.
	Slipping of the knife under the conjunctiva:—wounding of the sclerotic and division of the little vessels of the circumference of the cornea. Sometimes effusion of blood into the anterior chamber.	Blade of the knife too much inclined towards the sclerotic.	Re-direct the blade of the knife forward, and stop as soon as the cornea is divided.	Withdraw the instrument and cut the mucous bridle with blunt scissors. For the effusion of blood do as pointed out in the fifth column of page 142.
	Wounding the iris.	Introduction of the instrument by the point.	Introduce the instrument by its blade and don't incline the point backward, until it is in the pupil.	Enforce anti-phlogistic treatment, to avoid internal ophthalmia.

STAGES AND SUB-STAGES OF THE OPERATION.	ACCIDENTS.	THEIR CAUSES.	MEANS OF AVOIDANCE.	HOW TO REMEDY THEM.
Second Stage:	Crystalline chopped up, [as if "made mince-meat of."]	Point brought too backward.	Give the greatest attention to the direction of the point.	Extract the pieces with a scoop.
	Sudden escape of the crystalline with the vitreous body.	Incision of the capsule during the contraction of the muscles.	Wait dividing the capsule till the spasm has disappeared.	See *Completing the wound*, fifth column of Table, page 143.
	Contusion of the lips of the wound.	Instrument withdrawn too quickly, and the blade forward.	Withdraw the instrument with precaution, directing the blunt edge to the side of the cornea.	
Third Stage:	Escape of the Cataract with the vitreous body.	Pressure awkwardly made upon the globe by the surgeon or his assistant.		See *Completing the wound*, fifth column, page 143.
	Crystalline coming out with difficulty and a jerk.	Incision of the capsule too narrow.	Incise the capsule freely.	Return to the incision of the capsule, before the escape of the crystalline.
	Exit of the crystalline prevented.	1st. Cornean wound too small. 2nd. Incision of the capsule insufficient: 3rd. Adhesions between the iris and the capsule or between this latter membrane and the vitreous body. 4th. Considerable contraction of the pupil.	1st. Give a sufficient extent to the wound. 2nd. Incise the capsule freely. 3rd. and 4th. Dilate the pupil with Belladonna some time before the operation, to ascertain if there are adhesions. [I prefer a solution of *Atropine* to extract of Belladonna.—H. N.]	1st. Lengthen the section with a bistoury. 2nd. Perform crucial incisions of the capsule. 3rd. Use the scissors and divide adhesions between the iris and capsule; or in case of adhesions of the capsule to the vitreous body, seize the Cataract with a hook and extract with a scoop. 4th. If the pupil is contracted, stretch the patient on his back, in darkness, and let the eye repose before making a fresh attempt.

Division of the lens into pieces at the moment of its coming out.	Operating by extraction where the Cataract is too soft.	Prefer breaking, or else dilaceration of the capsule.	If some fragments remain in the anterior chamber, wait till the aqueous humor is reproduced; then try to make them come out by gentle friction on the upper eyelid depressed. Should this fail, introduce DAVIEL's scoop under the wound, to extract the largest pieces; but don't repeat this manœuvre frequently.
Contusion of the lips of the wound.	Introduction, several times repeated, of the scoop into the pupil for the extraction of crystalline *debris*.	1st. Leave cheesy particles of the Cataract to absorption, rather than continue the operation too long with the scoop.	
Introduction of air bubbles into the anterior chamber.	1st. Introduction of the scoop into the pupil. 2nd. Sudden exit of the crystalline.	1st. Ditto. 2nd. *See* fourth column, pages 143 and 144—*Means of preventing the sudden escape of the crystalline.*	Expel them by using gentle friction on the upper eye-lid when depressed, or by suddenly opening the lips of the wound after having waited till the anterior chamber is filled, and having put the patient in a convenient position: should this fail, draw them, along with the scoop, or displace them by filling the cavity of the orbit with warm distilled water.

[B] ACCIDENTS WHICH MAY HAPPEN IMMEDIATELY AFTER OPERATION.

STAGES AND SUB-STAGES OF THE OPERATION.	ACCIDENTS.	THEIR CAUSES.	MEANS OF AVOIDANCE.	HOW TO REMEDY THEM.
	Evacuation of the humors.	Muscular efforts.	Recommend the patient to rise gently from the seat which he occupied during the operation:—the eyes shut; the head inclined a little backward. Watch him attentively to his bed. Prescribe a purgative the evening of the day fixed for the operation; obviate all causes of vomiting.	Bring the lips of the wound together. Dress as usual, and enjoin the most perfect tranquillity.
	Sinking of the wound.	Sudden evaporation of its liquid parts.	Manœuvre with the utmost rapidity after completing the wound.	Keep the eye shut from ten to fifteen minutes, that the reproduction of the aqueous humor may impart to the wound its original suppleness and length; or else fill the cavity of the orbit with tepid distilled water.
	Swelling of the wound.	1st. Hernia of the iris. 2nd. Interposition of the edge of the lower eye-lid, between the lips of the wound.	1st. No means of avoiding it. 2nd. Prefer upper Keratomy in operating on eyes which are a little prominent.	1st. Reduce the hernia of the iris; or if that cannot be, remove it with curved scissors, taking care that the loss of substance corresponds to the pupil. 2nd. As soon as the accident is perceived, depress the eye-lid, and apply a bandage of English taffeta so that the ciliary edges are in perfect apposition.

[C] ACCIDENTS WHICH MAY HAPPEN SOME TIME AFTER THE DRESSING.

STAGES AND SUB-STAGES OF THE OPERATION.	ACCIDENTS.	THEIR CAUSES.	MEANS OF AVOIDANCE.	HOW TO REMEDY THEM.
	Iritis.	Irregular manœuvre;—wounding the iris in some stage of the operation.		Displace the bandages. Should inflammation ensue, combat it by copious bleedings repeated at short intervals; also by free friction of Belladonna and Rousseau's laudanum, round the orbit. Give opium internally.
	Hernia of the iris.	Dressing badly done, or disarranged by the patient's movements.		Remove the hernia if it cannot be reduced, and if it threatens to set up inflammation and suppuration. Then bring [very carefully] together the edges of the cornean wound: cover the eye with bandages, and prescribe the most energetic antiphlogistic measures.
	Infiltration of the wound. Hypopion. Opacity of the cornea. Phlegmonous chemosis. Exopbtbalmia. Inflammation of the eye.	1st. Irregular manipulation. 2nd. Dressing badly performed, or deranged by patient's movements.		After having exhausted every antiphlogistic method with a view to disperse inflammation, when ex-ophthalmia comes on with phlegmon of the eye, encourage suppuration by emollient cataplasms, and even open the bulb freely if the *phlogosis* threatens to extend to the Brain.

ON THE CHOICE OF THE PROCESS

IN THE

OPERATION FOR CATARACT IN GENERAL.

EXTRACTION holds the first place in DESMARRES' opinion, and as a general method (according to him) it should be preferred to all others. He adds, however, that it is not indistinctly applicable to all cases as though they were identical. The first grand object in practice is to *ascertain the* NATURE *of the Cataract.* Before choosing your process, also examine whether or not—and what kind of *complications* exist. Then, thirdly, pass in review and compare notes as to the chances of success or of failure.

Evils of undue predilection:

Many always operate by DEPRESSION: others as habitually and unreflectingly adhere to EXTRACTION. In my opinion nothing can be more reprehensible than for any surgeon to abandon himself to the bias of his own gratuitous predilection. The overruling consideration with us all, ought to be our patient's benefit, and not to sacrifice it to unreasoning routine, or make it secondary to the indulgence exclusively of some individual operation which happens to be a hobby one. The consequences of wayward and inconsiderate conduct may easily be inferred. In every respect they are as deplorable as they are censurable. Say that some per centage of failures is to be expected in almost every department of operative surgery, still it is not censoriousness but truth to proclaim

that the number of failures in the hundred, which have brought operations for the cure of Cataract into discredit, would to a physical certainty have been *lessened* by a painstaking and unprejudiced examination of the disease in each case, and particularly as to how it stands in connexion with complications.

Causes swelling the amount of failures:

Thoughtful and informed men, therefore, before deciding on one method of destroying opacities of the crystalline, to the arbitrary exclusion of other modes, should review every attribute of the case before them—as if with the uninfluenced mind of a judge seated on a tribunal. Having ascertained that a Cataract exists, the question then is, "of what *species?*" And here will be found the advantages of studying classifications of Cataract, such as appear at pages 103–4. Next, is it a FALSE or a TRUE form of the disease; and if the latter, is it *lenticular* or what? And what is it in respect of density: is it *hard, soft* or *liquid?* Furthermore, is it only capsular, or is it capsulo-lenticular? Is it secondary; and what, if any, are the *local* or general COMPLICATIONS?

Practical suggestions:

Much has been written on every one of these heads, seriatim; and among continental authors, DESMARRES has culled with candour and judgment from the contributions of various countries.

Where the Cataract is "false," one of the nicest operations in surgery, namely, operation for *artificial pupil*— may become necessary by implication; because thick false membranes, sometimes altogether obstruct the pupil. Not only is it then necessary to cut or break up, or

False Cataract: artificial pupil:

depress, or extract the lens, (or the opacity,) but also to cause a loss of part of the substance of the iris.

Hard Lenticular Cataract:

In the absence of local or constitutional complications of importance, *hard lenticular* Cataract may be either depressed or extracted. Extraction is generally preferred, especially among the aged. The argument is, that the crystalline not being absorbed, is likely by its presence in the posterior chamber to set up destructive inflammatory action. When the DEPRESSED Cataract is *hard*, the crystalline is not amenable to removal by absorption. But DESMARRES contends that *that* is no inconvenience, inasmuch as cases on cases have disclosed the crystalline, *bodily in the posterior chamber* upwards of twenty years after operating by DEPRESSION had been followed with success. I agree with him too, in referring the "inflammations" complained of, not to DEPRESSION itself, but to depression *badly performed;* or, as he says, when it has been performed on patients whose vision has been in abeyance through cerebro-ocular congestion; or with whom from whatever cause, bad local and constitutional conditions existed. "I have operated by depression upon a great number of old men, blind from hard lenticular Cataract, and I have always seen the operation succeed better than if I had preferred extraction. When the latter operation is chosen, it is true the Cataract comes out whole, with facility; but among some old men the wound in the cornea re-unites with difficulty, and the eye is thus very often compromised." DESMARRES is speaking of ordinary hard Cataracts; and he adds—"osseous, stony, or limy Cataracts, which induce inflammation by their mere presence, and are complicated with amaurosis, ought always to be extracted."

Neither depression nor extraction is appropriate, when lenticular Cataract is completely soft: (Desmarres, page 511.) "Breaking;" or [and] *dilaceration* of the capsule, are indicated. Depression is deemed impossible because of the slight consistence of the lens, which when in that state allows the needle to be waved through it, like soft mud or butter, without effectually displacing it in the least. Extraction is full of difficulty. You run the risk of dividing at one fell swoop both cornea and iris: the anterior chamber may have utterly disappeared; and besides, how are you to get the Cataract out of the posterior chamber? After all, must it not be broken into pieces! Suppose you scoop away, ever so cleverly, still all fragments cannot be removed; and the iris, and the lips of the keratic wound are bruised, and thereby indisposed to a favorable and speedy reunion. Soft lenticular Cataract:

But granting you have things healed up quite regularly, the whole conditions for secondary Cataract remain. On the other hand, by "breaking up," or where the capsule is simply "dilacerated," the lens comes under the absorbing influence of the aqueous humor, and will disappear gradually without the eye being endangered for an instant. In one case alone [always recognisable by the anatomical signs] would there be acute reaction. This exceptional instance is where the Cataract, at the time of the operation, has not yet attained very great softness; and certainly when once submitted to the action of the aqueous humour, it would rapidly swell.

In the table at page 103, are included among demi-soft lenticular Cataracts, such as are "striated," "win- Demi-soft lenticular Cataract:

dowed," "starred," "barred," "dehiscent," "three-branched," &c. Systematic eye-surgeons, as DESMARRES, comprehend in this category all wherein the crystalline entirely opaque, retains a nucleus of a certain density, whilst the cortical layers, though softened, have not reached their *acmé* of swelling. All Cataracts of this nature when *extracted* and plunged into water, swell rapidly, and in a few days attain a great size. If *depressed* they speedily undergo a similar *swelling* in the posterior chamber because of the aqueous humor, and thereby excite serious irritation and inflammatory disorganization. It is such forms of the disease, under the circumstances instanced, which reascend to the pupil, and constitute what are styled secondary lenticular Cataracts. Extraction is the most suitable operation for such opacities, and as they are by far the most frequently met with of any, hence the explanation why cases of "keratomy" are most numerous in good practice. The EXTRACTION of such Cataracts has been condemned because they are never got out of the posterior chamber without bits of the cortical strata being left in the pupil; thereby necessitating the use of the scoop at the risk of bruising the iris, or contusing the lips of the wound in the cornea. But DESMARRES contends a similar objection applies to depression. In fact he goes the length of saying that when depression is performed—of which "la manœuvre est toujours laborieuse, les débris peuvent déterminer, plus facilement encore qu' après l'extraction, la formation d'une Cataracte Secondaire." But I here differ from him, chiefly because the operation of depression by reclination, in my hands and in others, is the reverse of laborious. And also because bad consequences, whether

Reason of the frequency of "Keratomy:"

Is extraction preferable?

only temporary or persistent, are rather to be attributed to want of dexterity on the part of the operator, who is in fault—than to the process he inexpertly attempts and fails in accomplishing. Thirdly, I have my suspicions that many forms of so termed "secondary-cataract" are not so truly *secondary* as has been supposed, but in point of fact are cases of "miss" or of partial success only; as where a sportsman fires but does not always bring down his bird with his first shot, or only partially wounds it, and yet may succeed in doing so, and in bagging it too, by discharging with a better aim, a second shot from his double-barrelled fowling-piece.

Remarks on the dubious term "*secondary*-cataract:

That "*secondary Cataract*" exists, *in a sense* as the casuists say, I have not the presumption to question. But in all of them which are so described in books, I repeat my disbelief. Observation and reflection force the conviction on my mind, that some cases loosely reported as such, are less truly "secondary" in their formation, than *primary:* they are Cataracts in fact, which, in plain English, have escaped the first broadside of the enemy.

All operators not equally successful:

For my remarks on this part of an interesting subject, I hope I need neither apologise, nor unnecessarily guard myself from misconception by supplemental comment. Against the malice of misrepresentation no man can, nor need attempt to assure himself. Every soldier on a CHARGE does not forsooth *therefore* transfix his opponent on the point of his bayonet: and in eye-surgery (if I succeed in conveying what I mean, as unequivocally as I mean what I say) it is in like manner, that all operators do not merely *because they operate,* necessarily succeed in

impaling Cataract with the needle, or in taking it captive by the edge of the knife! What the bayonet is to the foot soldier, so is the Cataract instrument in the tried hands of the expert eye-surgeon. And has not eye-surgery *its* volunteers and young soldiers, as well as the standing army? We must allow therefore for a want of drill and discipline, and for the inexperience of adventurous recruits in the one case; and justly expect more effect from the *experientia docet* of the veteran campaigner, in the other.

Operation for "dotted Cataract:" Disseminated or dotted Cataracts may be DEPRESSED; but EXTRACTION is not inapplicable. Their density is at times considerable.

Traumatic Cataract: "Breaking-up" is preferable to extraction in the average of *congenital and traumatic* Cataracts. They are almost uniformly soft to their nucleus or kernel, as from their surface.

Glaucomatous Cataract: Where Cataract is complicated with—I would rather at once say compromised by GLAUCOMA, as it does not admit of any feasible operation, it may be dismissed here in as many practical words. The Cataract is an after occurrence to which the glaucomatous disorganisation is an antecedent. Then of what avail would an operation be, when we bear in mind THE FACT that long before any opacity overtakes the lens, the *retina* in glaucoma is disorganized past all surgery?

Liquid lenticular Cataract: The liquid lenticular variety admits of removal, either by extraction, or by the needle. DESMARRES almost in

similar words to my own, prefers the needle operation, "because it does not present any danger, and is almost invariably followed by complete success: *parce qu'elle ne présente aucun danger, et qu'elle est presque toujours suivie d'un succès complet.*"

Size of the incision:

Should extraction be preferred, there is no occasion for as large an incision in the cornea as some continentalists often needlessly practice. Where Cataract is *dense* as well as bulky, the incision of course should be commensurately free. "The result will be quickly obtained, if after dividing the capsule you watch that the kernel of the crystalline (generally very small and at liberty amidst the lenticular *detritus*) comes out at the same time with the more liquid parts of the Cataract, and does not fall into the posterior chamber."

The needle operation:

Operation with the needle is not so easy. The instrument should be held so as not to wound the iris. When the capsule is opened, a milky liquid escapes into the two chambers, and by making the aqueous humor muddy, is apt to hide the needle from sight. Tact, however, will enable an expert operator effectually to avoid damaging the iris. Desmarres advises, in addition to slow and steady movement of the instrument, that it be so handled that the little nucleus of the crystalline shall not pass into the anterior chamber whilst the surgeon is trying to divide the capsule. I also entirely concur that when operating with the needle on liquid Cataract, swelling of the crystalline *under the influence of the aqueous humor* is not to be feared; and consequently no inflammation. Be it added that *Scleroticonyxis*, also *Keratonyxis* are available. The first however, is generally preferred.

Capsulo-lenticular Cataract:

Being caused by opacity of the crystalline with thickening of the capsule following *iritis* or *capsulitis*, capsulo-lenticular Cataract is almost uniformly mixed up with adhesions. Depression and extraction offer equal difficulties. Where the eye is well shaped, without many false membranes, and the antecedent inflammation subdued, depression and extraction are possible. Whichever is preferred, inunction of belladonna, or instilling a solution of *Atropine* [as already noted at page 27] is essential as a preliminary, with a view to obtain as large a *dilatation of the pupil* as existing adhesions permit. If DEPRESSION is decided on, the needle is passed through the sclerotic, and the iris carefully separated from the capsule;—one by one of the little fibro-albuminous bands being destroyed;—and then the Cataract is depressed simultaneously with the opaque capsule. What we have reasonably to apprehend is consecutive inflammation, where there has been much previous diseased action in the eye. Again, should EXTRACTION be chosen, you may expect considerable difficulty in executing the second and third stages of the process: namely, when you have to divide the capsule, and draw out the crystalline.

Management of complications:

Adhesions are manageable with fine scissors. At times the iris should be incised from its ciliary attachments as far as the pupil, that the egress of the Cataract may be facilitated. In other cases the capsule must be seized with nippers, and after the envelope has been extracted, a *hook* may be required to withdraw the crystalline. But as DESMARRES truly observes, "all this demands much skill, much patience, and unless the adhesions are not numerous a sufficiently strong reaction may be expected." .... "If capsulo-lenticular Cataract is entirely adherent

to the iris, Depression and Extraction are equally impossible, and the process of Dilaceration of the capsule by *Scleroticonyxis* or *Keratonyxis* is indicated. When, on the contrary, capsulo-lenticular Cataract is only partially adherent, or not so at all, which is rare; when again the capsule is opaque only in a limited place, and the *density* of the lens can be judged of, the process should be chosen as if we had only to do with lenticular Cataract free of all complications."

Capsular Cataract:

The following extract, which I give almost textually, conveys the views of DESMARRES on several points of interest and nicety, as regards CAPSULAR CATARACT—with which his admirable chapter is brought to a close at page 663 of a work which I take pride in commemorating:—

CAPSULAR CATARACT.—"When the capsule is inflamed and has become opaque to such an extent that the pupil has lost its clearness, the disease should be considered *surgically* as if it were capsulo-lenticular Cataract. Besides at this stage nearly all capsular-cataracts finish by being complicated with opacity of the lens. Does it then matter whether the crystalline is transparent or opaque, when the capsule is so thickened as not to permit the luminous rays to arrive in the eye, since as soon as an operation has been decided upon, the crystalline apparatus must be entirely destroyed? Will our thoughts be generalized and the conclusion drawn, that as in all Cataracts the crystalline and its capsule must be destroyed, it is therefore of little importance to establish a *diagnosis* between simple lenticular and capsulo-lenticular Cataracts? But in the latter, the manœuvre will always be more difficult, because of adhesions between the capsule and the iris; and the result will be less certain because of this double reason: the inflammation which has thick-

ened the capsule, may revive and compromise the operation; and the manœuvre (infinitely more laborious,) may occasion some injuries."

[To guard against misconception, be it observed, DESMARRES is here adverting to Cataracts *formed by the capsule alone;* the crystalline having been destroyed by accident, or by operation.—H.N.]

Capsular Cataract, how formed? Varieties: complications, and their management:

"Considered thus, capsular Cataracts will be formed by one layer, or by two layers of the membrane, reunited by traumatic inflammation after the absorption of the crystalline. One of the varieties of capsular Cataract, the *arid siliquous*, [dry peapod shaped,] is a case in point. (a) If it be judged that the Cataract is not retained to the iris by adhesions too old and too strong, *depression* will be chosen; although extraction by the cornea, or by the sclerotic, may be equally practised. Whereas if it be thought that these adhesions cannot be easily broken, recourse will be had in preference to extraction by the cornea, or even to extraction by the sclerotic:—operations which if the whole of the false membrane be not extracted, at least a great part may always be removed. Election however should be made between the two processes of extraction. If the capsular opacity be very thick, very adherent to the iris, especially on the internal side, take good care not to have recourse to sclerotical extraction, because the false membrane not separating from the iris will not admit of being drawn out without producing separation of the diaphragm. On the contrary, if in such a case the cornea is opened on its inferior border, we can—(the puncture being nearer to the adherent point than if operating by the sclerotic)—draw

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(a) This is the name which has been given, since the time of SCHMIDT, to a traumatic opacity of two layers of the capsule, when the crystalline is entirely or in great measure absorbed.—*Desmarres*, page 523: and at page 661, he observes, the processes for the destruction of "*cataractes secondaires*," are alone applicable here.—H. N.

out a great part of the opacity, cutting off a sufficiently large portion, and thereby re-establish the pupil, without fear of breaking, by too strong a traction the natural attachment of the diaphragm. Should the opacity be more strongly adherent to the external side, it will be possible but not preferable to operate by the sclerotic; the false membrane by the position which it occupies being then near enough to the point of puncture to be in great measure cut off, if the adhesions cannot be destroyed by simple traction with the nippers." Complications and their management:

"If capsular Cataract forms after an operation for lenticular Cataract, care must be taken, whatever process is chosen, not to wait long before removing the opacity from the pupil, so as to prevent adhesions between the capsule and the iris becoming too strong: a circumstance which may prevent the surgeon extracting or depressing the false membrane; or which at any rate would singularly impede the manœuvre."

"In a rare enough case where the capsular Cataract is completely free, and floats in the middle of the pupil which I have many times observed, it is sufficient to open the cornea as in the operation for artificial pupil; and as soon as the aqueous humor escapes, the false membrane becoming entangled in the keratic opening, is easily extracted by the help of fine nippers.

The *choice of the process* should not however be made in a spirit of absolutism, on the data alone which we have laid down. The surgical process should be preferred, advisedly:

Depression for instance, will not be performed if the patient has suffered a long time from congestive amblyopia; because by leaving the crystalline in the eye, risk is run of augmenting the causes enfeebling the retina. It will not be chosen, either if the eye bear traces of old internal inflammation, such as discoloration of the iris, numerous posterior synechies, or incipient staphylomas of the sclerotic. Extraction will moreover be preferred if the patient is subject to ocular neuralgias, especially if

such neuralgias are attributable to some affection of the choroid, or of the ciliary body, &c.

Leading contra-indications to operating by "extraction."

Extraction by the cornea [a] will in turn be rejected, should there exist, *inter alia*, one of the following conditions :—

1st.—*Eye too small.* Eyes objectionably small are sunk in the orbits, and the Keratome, if it reaches the place at the point chosen, cannot be made to preserve the requisite parallelism with the iris. When the puncture and counter-puncture are made it is often impossible to bring back the eye to the centre of the orbit, because one is hindered by the external border of the cavity, and the wound is not completed. Besides, we almost invariably wound eyelids whose opening is too narrow.

2nd—*Eye too prominent.* If the globe is bulky, *parallel with the head*, and the eyelids largely opened, risk is run of seeing the eye empty itself during EXTRACTION. That is because, in this operation, the eye-lids being distant the one from the other, pass behind the globe; and the *orbicular* by contracting, presses on the bottom of the eye. Add to this, that it is sufficiently difficult for the assistant and surgeon not to contribute a little on *their* part (!!) to such compression.

3rd.—*Vitreous humor softened.* Suppose the Cataract is floating and other signs of *synchesis* exist, the cornea should not be opened; otherwise it would happen that the vitreous humor would come out at the same time as the crystalline, or even that this body of greater density than the "*vitrine liquéfiée*" would remain *per se* in the cavity of the bulb.

4th.—*Anterior chamber destroyed.* The iris is divided, and losses of substance more or less large take place if

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[a] *Sclerotomy* being a process generally abandoned, and being employed only for certain "secondary Cataracts," DESMARRES notes that he purposely restricts his remarks to KERATOMY.—H.N.

before the operation we are not certain that the keratome can pass easily behind the cornea without wounding the diaphragm. There are circumstances, however, where it would be better to divide the iris, and even to remove a small part rather than have recourse to an operation by the needle. This observation applies especially to cases where, owing to cerebro-ocular congestions, the eye presents signs of amblyopia.

5th.—*Cataract complicated with partial anterior synechy.* In this condition the *iris* would be injured with the keratome, whereas injury to this membrane may be avoided by the needle operation.

6th.—*Granulous eye-lids and diseases of the lachrymal sac.* If we operate by extraction in such cases, risk is run of seeing the cornea suppurate, because the wound—bathing in the mucosities proceeding from the conjunctiva, and in the tears which are no longer absorbed—is not found in the necessary conditions for union by the first intention.

7th.—*Bad general state of health, or complications preventing the sufferer keeping quiet.* In extreme old age, and among some individuals whose health is impared, it often enough happens that the re-union of the keratic wound is imperfect and the eye thereby compromised. Persons afflicted with chronic diarrhœa; those who are tormented with asthma, chronic bronchitis, hernia, or diseases of the urinary passages, cannot be operated upon by the process of EXTRACTION: because *they cannot tranquilly keep their bed.* In the same category we rank all those who are over fat, or who having no self-command cannot sentence themselves to *remain quiet.*"

Concluding hint by DESMARRES.

DESMARRES somewhat *naively* concludes by saying this last observation applies to "ALL CHILDREN" IN GENERAL! And most certainly it does in an admonitory sense of great significance which it concerns every patient operated on for Cataract, not only to *know* but likewise *resolutely to act upon.*

In concluding this summary, it now only remains for me to dispose, supplementally, of such topics whose consideration in the preceding pages has been either purposely postponed, or merely glanced at in passing. With different readers the several subjects will have their respective phases of interest. Being *miscellaneous,* and therefore admitting of being handled without any misplaced attempt at a strict observance of studied arrangement, I need say no more in mitigation of criticism, but take them up at once, pretty nearly in the order of succession in which they have emerged.

Accordingly, (1st) after a word with reference to the derivation, and partial applicability of the term "Cataract" to the diseased action which has engaged so much of our attention, I propose (2ndly) to submit a table shewing at one view *the entire* EYE-PRACTICE *during the last year,* in the admirable—and as I believe it also now to be—the unequalled hospital, to which I have had the honor of being attached for so many years of increasing interest and experience. 3rdly, A leaf or two on a recent case of *Black* Cataract,—a rare form of disease. 4thly, Erroneous and unenquiring repetitions as to SANSON's "three-lights." 5thly, After respectfully amending DESMARRE's description of my friend GUTHRIE's operation, which I have seen performed scores of times by the latter able surgeon, I shall comment upon my own favorite process—the operation by RECLINATION. 7thly

The use of Atropine in *dilating the pupil* having been enforced in my notes, I will point out the advantages derivable from Veratria in *closing it*. Last of all I shall wind up, as promised, with a compendious article illustrative of the inhalation and use of *Chloroform* and Ether, in the operative surgery of leading cases of ophthalmic practice.

Application of the term "Cataract:"

I.—Agreeably to the terms of the note at page 6, it is right to state that the somewhat too grandiloquent epithet "Cataract," was not originally applied, as many erroneously suppose, by the Greeks. It was first adopted or imported by the Arabian practitioners. It is rather Arabic—or *arabesque* in its bestowal. Referring to the opening remarks (p. 72, &c.) and in particular to page 75, it will be seen what MAGNE says wisely and well. DESMARRES observes, at page 493 of his work,—"Cataracte dérive du grec *Kataraktes*, chute d'eau, de *Katarassein* renverser avec force, couler avec violence." Now, though the Greek verb Καταράσσω means to rush, destroy, or abolish, &c., yet in nature there is little in common between the *disease of the eye*, figuratively designated "Cataract," and the *Cataracts* which give majesty and interest to the scenery or landscape of WATERFALLS, whether on the scale of NIAGARA, or of the *Cataract of the Ganges*, or the *Falls of Clyde*. There is no rushing or precipitate fall, in the Cataract of surgery! To my mind, the only accompaniment of the Cataract in nature, and that which the *disease* so designated by Galen and the Arabians is also attended by, is the *misty vision*, and confusion of light corresponding to the *spray* which rises upon the headlong descent of volumes of fluid, varying

Philology: in force from tiny waterfalls—to sublime Cataracts, such as those I have incidentally named. Many of my friends have expressed their surprise how such a "*sounding* term" came from the Grecks—who as every scholar is aware were singularly happy in the characteristic appropriateness of their epithets. I could say much more on this theme: but I forbear. The propriety of the derivation, or the pertinence of the name may be settled among scholars and philologists. Meanwhile it is matter for congratulation with practical men, that the disease is not only now well understood, but above all that its management and the best means for its *cure* have attained so high a degree of perfection.

Table of annual practice in the Liverpool Eye-Infirmary.

II.—In connexion with what DESMARRES has stated as the extent of his hospital practice in Paris, with the number of indigent persons on his books (see middle paragraph of this Treatise, page 100,) I here append a table shewing ours in Liverpool,[a] for the year 1847, as verified

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[a] The LIVERPOOL EYE-INFIRMARY was established in 1820; and since then to the beginning of 1848, we have had *fifty-one thousand nine hundred and fourteen cases* under treatment.

In the *Ear*-department, not yet ten years in operation, *eighteen thousand* nine hundred and sixty-persons, have received the benefit of the Institution.

The following statement in the last printed Report exhibits an augmentation in the number of of patients in *both branches* of the charity:—

In 1847, the number of new Eye cases has been 3723
„ the number of new Ear cases 2846
——6569
In 1846, the number of new Eye cases was..3510
„ the number of new Ear cases.....2798
——6308
Showing an increase in 1847 over 1846 of.....261 cases.
While the increase on 1845 is .....588 cases.
The total number of times patients have been prescribed for, all of

and published in the annual printed report. My classification is alphabetical, and the third line of next page shews what has been done, as immediately concerns the subject of this volume.

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whom received the necessary dressings, medicines, &c., free of charge, has been seventeen thousand six hundred and fifty-six.

In seconding one of the resolutions, D. Dockray, Esq., "expressed satisfaction at being present for the first time on an occasion of that kind. He had resided only a short time in Liverpool, but his attention was drawn to the merits of the institution by a slight circumstance, which he would relate to the meeting. He happened, some time ago, to be going from Liverpool by Railway, and he found himself in company with a lady, gentleman, and a little boy. They were going to some part in the neighbourhood of Hull. He was very much struck with the appearance of this little boy, who was about ten years of age, and who seemed to be in a state of great excitement at the objects he saw around him. The child was born blind. He (Mr. Dockray) ascertained he was one of the patients, returning home, after having gained sight by operation, while an inmate of this institution. His parents seemed to be overflowing with gratitude. He was so struck with the circumstance that, on returning home, having had one of the reports handed to him by these parties, he mentioned it to the worthy treasurer, and had great satisfaction in enrolling himself as a small annual contributor. The subscribers should not be at all discouraged by the present state of the funds. No doubt instances such as he had related would occur again, and be the means of doing good."—*Report of the Liverpool Eye and Ear Infirmary*, p. 10.

H. N.

TABLE OF DISEASES TREATED IN THE LIVERPOOL EYE-INFIRMARY, IN 1847.

CLASSIFICATION OF DISEASES.	JAN.	FEB.	MAR.	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL.
Abscess of Lids	7	5	2	4	5	2	4	1	4	1	4	6	45
Amaurosis	5	9	14	10	15	12	9	19	16	20	13	12	154
Operations for CATARACT	**4**	**7**	**8**	**6**	**6**	**10**	**7**	**6**	**7**	**8**	**5**	**7**	**81**
Conical Cornea	..	..	..	..	..	..	..	..	..	..	..	..	..
Closure of Pupil	1	3	6	3	2	3	1	2	1	1	..	2	25
Contusions, Wounds, Burns, Particles, &c.	26	24	30	33	37	26	29	42	35	29	31	20	362
Cornea, Opacity of	21	25	28	37	27	25	20	30	17	28	26	14	298
—— Ulcers of	12	8	16	18	25	19	18	14	16	6	17	7	176
Corneitis	4	11	4	7	13	3	4	10	7	8	9	1	81
—— Strumous	1	..	..	..	2	..	..	..	1	..	1	..	5
Dislocated Lens	..	..	..	1	..	1	..	..	..	1	1	..	4
Encysted Tumours of Lids	2	6	5	7	4	2	1	4	5	6	7	1	50
Ectropium	..	..	1	1	..	1	1	..	2	1	1	..	8
Entropium	5	3	4	2	2	3	7	9	4	..	3	2	44
Epiphora	1	8	3	..	4	3	1	3	1	3	..	3	30
Fistula Lachrymalis	4	3	3	3	3	9	1	2	4	..	2	4	38
Fungus Hæmatodes	..	..	..	..	..	..	..	..	1	..	..	..	1
Glaucoma	..	5	2	2	2	1	2	1	..	3	2	..	20
Granulations of Lids	2	5	7	4	4	3	2	5	4	3	1	1	41
Hemeralopia	..	..	..	..	1	..	..	..	..	..	..	1	2
Hæmophthalmus	..	..	..	..	..	2	..	..	1	2	..	.	5
Hordeolum	1	1	..	1	1	2	2	..	1	1	..	..	10
Hypopyon	..	..	..	..	2	2	1	1	1	2	2	..	11
Hydrops Oculi	..	..	..	..	..	..	..	..	1	..	..	..	1
Iritis	1	2	2	4	4	3	1	3	..	4	3	3	30
—— Syphilitic	2	..	1	7	4	3	..	2	4	2	3	3	31
Nyctalopia	..	..	..	..	..	..	..	..	1	..	..	1	2
Ophthalmia, Catarrhal	47	39	66	73	63	55	35	50	52	68	54	55	659
——, Conjunctival, Acute	15	12	22	4	13	18	15	16	9	9	11	11	155
——, ——, Chronic	15	11	14	7	14	18	10	16	7	8	10	7	136
——, Erysipelatous	2	1	1	2	..	..	1	2	..	3	4	1	17
——, Gonorrhœal	..	..	..	..	1	..	..	1	..	1	..	..	3
——, Morbillous	..	..	..	..	1	1	..	..	..	..	..	..	3
——, Purulent	5	4	7	5	7	5	1	9	6	3	4	4	60
——, Pustular	7	15	9	15	18	16	13	14	4	3	4	12	130
—— Rheumatic	1	1	2	4	4	2	..	5	3	2	2	2	28
——, Sclerotic	5	3	5	1	6	8	9	10	10	13	8	4	82
——, Strumous	12	13	17	26	28	32	26	25	23	15	11	21	249
——, Tarsal	29	34	50	57	42	29	34	46	35	52	36	30	474
——, Variolous	..	..	..	..	3	5	2	4	2	..	2	..	18
Pterygium	..	1	..	..	3	1	..	2	1	1	..	1	10
Ptosis	1	2	2	..	1	..	1	..	..	..	1	1	9
Photophobia	..	..	1	3	..	2	1	1	1	3	1	1	14
Staphyloma of Cornea	1	2	3	3	3	5	2	3	2	3	1	..	28
—— of Iris	..	..	..	2	1	3	2	1	1	1	..	2	13
Strabismus	3	2	13	6	5	8	4	6	3	3	5	2	60
Suppuration of Eye-ball	..	1	..	..	..	..	..	..	..	..	..	..	1
Tic Doloreux	1	..	3	2	6	..	1	..	..	..	2	..	15
Tremulous Iris	..	..	..	..	..	..	..	..	..	..	1	..	1
TOTAL IN 1847	244	266	351	360	383	343	267	366	293	318	288	244	3723

On comparing the printed reports of other eye-institutions, in various parts of Great Britain and Ireland, with those of the Liverpool Eye-Infirmary, I cannot wonder at the surprise frequently expressed by visitors and benefactors that the number and importance of the cases annually under treatment here, should surpass those of most other large towns. Edinburgh, for instance, is peculiarly situated, and in other respects is differently circumstanced; but there must be a very *migratory* and *mixed population* in Glasgow. Nevertheless, I perceive by the twenty-fourth annual report of the "Glasgow Eye-Infirmary," as "submitted by the directors to a general meeting of the contributors, 13th January, 1848," that during the year 1847, the number of cases in that populous city, was 790; or, including 243 "whose names remained on the books" *one* thousand and thirty-three patients only, "have been under treatment since January 1847." Whereas, in Liverpool, as the last report shows, our total is *three thousand* seven hundred and twenty-three. The Glasgow report instances only *fifteen* cases of CATARACT, of which thirteen appear to have been submitted to operation—the specification being:—

"Division of Cataract 7
Displacement of Cataract . . . 1
Extraction of Cataract . . . . 5"

In the third line of the table for Liverpool, (page 166) the specification shows that the *average* of operations for CATARACT alone for *two months* throughout the calender, exceeds the number operated on in Glasgow *for the whole year*. In 1847, (see third line already referred to) the *total* of operations for Cataract alone, with us is *eighty-one*. Although the population of Glasgow, (migratory

EYE-SURGERY in Liverpool exceeds that of most other towns throughout Great Britain.

The high returns not explicable by reference to the mere *number of inhabitants*, to which in all towns the number of leading cases and operations, bear only a subordinate relation:

and resident) exceeds that of Liverpool, yet the mere *census* of the inhabitants cannot account for such differences between the returns alluded to. In addition to resident and casual patients, persons afflicted with eye-disease come to Liverpool from all parts of the three kingdoms, and receive the benefit of this charity. There are in several institutions many preliminary forms and applications to be gone through by patients, before they can be admitted, and which sacrifice a great deal of the poor sufferers' time. But in consideration of the rapid progress of disease, and the importance of the sense of sight, as well as what is due to the value of *time*,—applicants have only to present themselves for advice; and if *indigent and diseased* they are eligible, and at once admitted to the benefits of our Liverpool Eye and Ear Infirmary. This circumstance, and the reputation which the charity has acquired, will assist in accounting for the comparatively great number of cases under treatment, and the operations for Cataract annually performed in what his Majesty George III took pleasure in designating—"the good old, loyal town of Liverpool."

Annual statistics of 700 operations for the cure of *Cataract:*

Before passing from the subject of "*statistics*," on a more thorough examination I find that the number of times I have operated in my hospital for CATARACT, including 1847, is about seven hundred. In the note at page 28, I have said in round numbers, six hundred. But that return did not include the 81 cases during last year. If asked by those interested in authenticated returns of particular forms of disease cured by operation:—if asked by statistical inquirers, how I make out my seven hundred cases of Cataract operation, in Liverpool:—I readily

do so, by citing the number for each year—from 1834, down to and including 1847. Here is what a grand jury would return as "a true bill:"—

Returns for the last 14 years.

CATARACT OPERATIONS

PERFORMED AT THE LIVERPOOL EYE INFIRMARY,

IN—

1834	48
1835	45
1836	38
1837	46
1838	33
1839	47
1840	39
1841	36
1842	50
1843	56
1844	64
1845	59
1846	72
1847	81
Total	714

HUGH NEILL.

III.—NOTES OF A CASE OF BLACK CATARACT.

I have at present under my care one of the most curious cases of Cataract which has hitherto fallen under my notice. The young lady has large well-formed eyes. The irises are dark brown; the pupils very movcable

Recent case of *Black* Cataract, which the author took to London:

and of natural size. She has for many years had imperfect sight of the left eye, which now is nearly blind; her right eye is also becoming gradually dim. On examining the pupils with a microscope there is a deep-seated opacity of a very dark brown—a *brown black*. SANSON's test by the taper gives only one light. Upon dilating the pupil a large central opacity is seen in both eyes—but larger and denser in the left eye. The capsule seems tolerably transparent in the centre, and opaque white dots are to be seen at different places round its outer edge; but they are only visible when the pupil is dilated to its widest extent. The microscope shows the opacity of the lens to be caused by minute deposits resembling myriads of little dots of the darkest brown colour.

Having never seen a similar case, and concluding that such a form is the Black Cataract of the Continentalists, I took the young lady to London, to shew her to my friends Mr. Guthrie and Mr. Lawrence. They both expressed their disbelief in the existence of Black Cataract:—neither however had seen a case similar to the one I brought to their notice. They considered it extremely rare, and agreed with me in supposing that such might have been set down as a specimen of the *Black* Cataract of authors. Both however conjectured that the lens would not be black if *taken* OUT *of the eye*. Be that as it may, there can be no doubt of the decided dark, or black brown hue of the Cataract as seen in its actual state of *esse* while *in* this lady's eyes. When the pupils are contracted, an ordinary examination would fail to detect the peculiarity of the disease. Never, in all

my experience, having before seen any thing like this instance, and as I was aware that DUPUYTREN had denied the existence of "*Black* Cataract" — (on the rather egotistical ground, merely that he had never met with a specimen)—I was not surprised at the remarks of the two eminent men in London to whom I hastened to shew the case. On referring to leading authorities I find DESMARRES supports the conviction that there *is* such a form of opacity, as Black Cataract. He quotes the corroborative observations of PELLIER, of WENZEL senior, of GRAEFE, and of the yet more extensive facts reported by LUSARDI. I am now a convert to belief in the affirmative; and I agree with DESMARRES, who (at page 505 of his work) says — "Il serait impossible aujourd'hui de révoquer en doute l'existence de la Cataracte noire, ainsi que l'ont fait Dupuytren et Delpech qui ne l'ont jamais rencontrée dansleur immense clientéle." He adds that Black Cataract is one of those which presents the greatest degree of *density*.

Conflict of opinions: leading authorities:

The cause of the specific and rare *colour*, has given rise to much conjecture. Some, as MULLER, attribute it (the colour) to *melanosis*. LANGENBECK and others ascribe it to the presence of *manganese!* In the case which I submitted to LAWRENCE and GUTHRIE, I considered the colour most probably referable to oxyde of *iron*.

What is the *colour* owing to?

As to the value of SANSON'S "three lights" in the diagnosis, I find DESMARRES in conflict with MAGNE. The former contends (page 538 *op. citat*) that an eye may be the subject of Cataract, considerably advanced too, and yet allow of the three lights being distinctly

SANSON'S test, how far distinctive:

visible, especially if the seat of the Cataract is the circumference of the lens, leaving as it sometimes does the centre perfectly transparent. MAGNE has stood out for one light only of the three being discernible, as *the* diagnostic of Black Cataract: on the other hand DESMARRES avers that the apparition of one luminous image is common to *pigmentous* as well as to *black* Cataract. I cannot help adding, suppose it is, still it is a most valuable aid in making out the kind of disease. (a)

IV.—ERRORS, AND UNENQUIRING REPETITIONS AS TO *Sanson's* "THREE LIGHTS."—If the value of SAN-

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(a) Speaking of the "Catoptrical test" recommended by SANSON, PURKINGE, and others, Mr. GUTHRIE says, "it is valuable in distinguishing incipient Cataract. The pupil having been fully dilated, the patient should be seated with his back towards a moderate daylight; the surgeon standing before, and a little above him, with a lighted candle in his hand, burning with a bright, but not flickering or blazing flame. If such a lighted candle be moved at the distance of a few inches, say from four to six or eight, before a healthy eye, three reflected images will be seen; two erect and one inverted. The first erect one is from the surface of the cornea, the second from the anterior surface of the lens, and the third or inverted one, from its posterior part, being also more sharp and defined than the erect one, which is reflected from its anterior surface, is much smaller, and seems placed before it. It requires care and habit to distinguish the inverted one immediately, and it follows the motions of the candle, being seen to the left when the candle is moved to the right, and *vice versâ*.

In amaurosis the three images can always be distinctly perceived. In incipient Cataract, the inverted image is early obliterated, or rather its appearance is nearly prevented, and cannot at last be seen. The deep erect one, which also becomes very early indistinct, declines at last into a mere general reflection, difficult of observation, but which is of no consequence, as the disease is otherwise distinctly marked."—*On Cataract by* CHAS. GARDINER GUTHRIE, *Assistant Surgeon to the Royal Westminster Ophthalmic Hospital. London*, 1845, *see page* 27.—H.N.

SON's discovery, as a means of "differential diagnosis," has been overrated by the discoverer himself; candour equally dictates the remark that it has not received justice on its own merits; and that its use has been underrated by several of his rivals and opponents. I cannot otherwise than concur with what SANSON's pupil has observed in the opening paragraph of his Memoir to the Academy of Sciences, which I have given at page 83 of this work. With equal truth and affection, MAGNE says, "on the mode of observing and using in practice the three images of a candle reflected in the eye," all he has learned through the applications addressed to him on the subject, has proved that SANSON's discovery is far from being known or appreciated." Misunderstandings on the subject have not Echoists: been confined to the Continent. Books in the English language, and papers read to scientific meetings in this country, will convince every dispassionate observer that strange errors and repetitions have been propagated by writers to whose talent the reproach on this point is due, that they should have known better than to have acted unenquiringly as mere echoes and reiterators of the mistaken views of others. MAGNE points out precautions, the observance of which is essential in bare justice to the test. What he "suspects," as conveyed at the foot of page 84, goes a great way to explain why the use of artificial light as an adjunct in the diagnosis of Cataract, has fallen into desuetude: "comment donc" (says MAGNE) "comment done se fait il qu' aujourd'hui ce moyen soit à peine employé, je dirai presque oublié? Je crois que les difficultés qu'il présente au chirurgien qui n'en a pas l'habitude, rebutent pour l'ordinaire, et

Sources of fallacy:

que plusieures tentatives infruetueuses ne sont pas suivies de nouveaux essais," &c., &c. He adds, "It must be so, for I have heard the ehief of the old eye-elinique of la PITIE say, he had lost mueh of his eonfidenee in the use of the eandle, beeause it had often led him into error. Several tell me they have found it the same. But does that militate against the diseovery of SANSON? Ought it therefore to be rejeeted as not to be depended on? Assuredly not. It is not the proeess whieh is at fault [or wrong]—ee n'est point *le procédé qui a tort:* e'ést la *manière dont on l'emploie,*" *&c.*

What in fact is *to be seen,* under the circumstances? NEILL'S remarks:

Errors, moreover, are in eireulation as regards the phenomena *really seen,* on applying the artifieial light suggested by SANSON. I have satisfied myself of this, and have eonvineed others in a few minutes by aetual demonstration with the *model,* and by experiment on the eyes of animals. The deseription from MAGNE in the memoir at page 84, is eorreet. Others have eaught the infeetion of mistakes, and have represented the phenomena differently. I lately heard a paper read, in whieh the essayist of the evening repeated startling errors on matters eapable of contradietion by a direet appeal to observation. The inferenee is, that authors like the one in point, had not tried the experiment or judged for themselves. The question is, instead of looking through "the speetaeles of books," did they resort to the experiment on the model; or themselves examine the eyes of patients after duly *dilating the pupil?*

It is rare to find so pains-taking and judieious a physiologist as Professor DUNGLISON, of New York, falling

into such obscurity (though not error) as I apprehend he has recorded at page 349 of his popular and well-known "Practice of Physic." In an otherwise able chapter on Amaurosis, he says: "In doubtful cases too, it may be well to examine the eye by means of artificial light. If a lighted candle be held before an eye, the pupil of which has been dilated by belladonna, and on which there is no obscurity in the humors or their capsules, three images of the flame are perceptible,—two upright and one inverted—one of the former reflected from the cornea, and the other from the anterior part of the crystalline; the *third* INVERTED *image* being caused by the reflection from the posterior concave surface of the crystalline. It is obvious that if the inverted image be observed, there can be no opacity on the posterior capsule of the lens, or in the lens itself."(a) The phenomena are differently and more correctly stated by MAGNE, as will appear on comparing the first paragraph at page 84 *(ante.)* The first and most forward image seems upright. It is the middle one which is *inverted.* The third or hindmost is *upright* like the *first.* The *middle* INVERTED one, is considered to be produced by the posterior segment of the crystalline capsule. "Opacity of the cornea, says Magne, destroys all the three reflections." — *Images* would be a less exceptionable word: I shall explain why. "Opacity of the anterior capsule causes the disappearance of the two hinder reflections. Opacity of the posterior capsule prevents the production of the inverted reflection." I respectfully refer the reader to the sequel at

Descriptions by Professor DUNGLISON of New York, and others.

(a) DUNGLISON'S *Practice of Physic,* vol. i. p. 349. New York.—H.N.

page 84, and to a sustained perusal of the whole memoir. It is replete with interest—in OPTICS, in PHYSIOLOGY, and in PATHOLOGY.

Questionable if all *three* of the "images" are due to *reflection*. Is not the inverted one owing to *refraction*?

Before passing to other topics, I can here only remark why I prefer the word *images* or lights to "*reflections*." It is because MAGNE too comprehensively so includes the *three*. Now, I question if all three are caused by *reflection*? If I am right, *images* would be strictly a less exceptionable word, because I am compelled to think only two of the lights are reflections, and that the inverted image—the odd looking middle one—is owing—not to reflection, but *refraction*. As tested again and again by me on the model, and on healthy eyes, I repeat that the first shadow is upright, and on the cornea: the next is a dim shadow or image. Call it what you will, it takes a *middle* place and is *inverted*. The third, and most backward, resembles a small clear flame, and is *erect*. So much for phenomena, which are matter of fact under actual observation. Their true theory, or explanation, may be left to whatever difference of opinion "learned men" proverbially entertain on moot points. Part at least of such "appearances" is explicable on similar optical laws to the *Mirage*, as described by scientific travellers from Egypt and the Highlands of Switzerland; or to the *rationale* of that phantom at sea [a] known as the "Flying Dutch-

The "Phantom-ship: *Mirage*, &c.

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[a] See the singular account detailed by Captain, now the Rev. Mr. SCORESBY, in his Northern Voyages. To the consternation of part of his crew (who thought the Devil was in the wind) he and his officers observed his father's ship, and the "wraiths" of several men on board with whose persons they were acquainted. The *apparition* seemed sailing through the air, on a cloud!!! Captain Scoresby's

man," still fraught with superstitious terror to sailors, even after the systematic accounts, on record, of ships and whole fleets suddenly seen, as if sailing on the

"Sightless couriers of the air"—

right overhead of mariners, in latitudes leagues apart from where the *substance*, of what formed the miraculous shadow, could by possibility have been visible in its place on the ocean.

Sir D. Brewster's views on *unusual refraction:*

P.S.—Since the note [a] to page 176 was in type, I have consulted Sir David Brewster's work on *Optics* —the 19th volume of "The Cabinet Cyclopedia." In the chapter on the *Application of Optical principles to the explanation of Natural Phenomena* there is much available matter pertaining to the singular appearances cursorily adverted to, in connection with Sanson's discovery of the three lights seen in a healthy eye under the test of the taper. Sir David, under the head of "UNUSUAL REFRACTION" (*Cabinet Cyclopedia*, vol. 19, p. 255,) reminds us that the atmosphere is a transparent mass of air possessing the property of refracting light, and that this refractive power is greatest at the earth's surface and gradually diminishes till the air becomes so rare as scarcely to be able to produce any effect upon light. When a ray of light falls obliquely upon a medium thus *varying* in *density*, in place of being bent at once out of its direction, it will be gradually *more* and *more bent* during its passage through it, so as to move in a curve

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position, noted at the time, was at an immense distance from where his father's ship and crew actually were. How far, I cannot state, as I write from memory. See also on this optical subject, similar visions (scientifically considered) in the narrative of Captain Parry's Voyages to the North Pole.—H.N.

line, in the same manner as if the medium had consisted of an infinite number of *strata* of *different refractive powers:*—such are Sir David's words. Further on he says:—"Although the rays of light move in straight lines *in vacuo* and in all media of uniform density, yet, on the surface of the globe, the rays proceeding from a distant object, must neeessarily move in a curve line, because they must pass through portions of air of different density and refractive power. Hence it follows that, excepting in a vertical line, no object, whether it is a star or planet beyond our atmosphere, or actually within it, is *seen* in its *real place.*" Great local heats or local colds produce great changes of refractive power, and give rise to optical phenomena[a] of a very interesting kind. Such phenomena have received the name of *unusual refraction,*

Phantoms seen by the Reverend Mr. Scoresby, Jurine & Soret, Monge, and Dr. Vince:

[a] After noticing the strange sights seen by Mr. HUDDART; and those by Dr. VINCE at Ramsgate, it appears—in addition to what I stated from recollection at page 176, that the then Capt. SCORESBY had previously while navigating the Greenland Seas observed *in the air,* the apparitions of eighteen ships, then nearly twelve miles distant. "One had an inverted image immediately above it"; two had "*two* distinct *inverted* images above them, accompanied with two images of the strata of ice."

It was in 1822 that the Rev. Mr. Scoresby recognised his father's ship the *Fame* turned upside down in the air, *although the ship itself was below the horizon.* "He afterwards found that the ship was seventeen miles beyond the horizon, and its distance thirty miles. In all these cases, the image was directly above the object; but on the 17th of September, 1818, MM. Jurine and Soret observed a case of unusual refraction, where the image was on one side of the object. A bark about 4000 toises distant, was seen approaching Geneva by the left bank of the lake, and at the same moment there was seen above the water an image of the sails, which, in place of following the direction of the bark, receded from it, and seemed to approach Geneva by the right bank of the lake; the image sailing from east to west, while the bark was sailing from north to south. The image was of the same size as the object when it first receded from the bark, but it grew less and less as it receded, and was only one half that of the bark when the phenomenon ceased. While the French army was marching through the sandy deserts of Lower Egypt, they

and they are sometimes of such an extraordinary nature as to resemble more the effects of magic than the results of natural causes."

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saw various phenomena of unusual refraction, to which they gave the name of *mirage*. When the surface of the sand was heated by the sun, the land seemed to be terminated at a certain distance by a general inundation. The villages situated upon eminences, appeared to be so many islands in the middle of a great lake, and under each village there was an inverted image of it. As the army approached the boundary of the apparent inundation, the imaginary lake withdrew, and the same illusion appeared round the next village. M. Monge, who has described these appearances in the *Mémoires sur l'Egypte*, ascribes them to reflexion from a reflecting surface, which he supposes to take place between two strata of air of different density.

One of the most remarkable cases of mirage was observed by Dr. Vince. A spectator at Ramsgate sees the tops of the four turrets of Dover Castle over a hill between Ramsgate and Dover. Dr. Vince, however, on the 6th of August, 1806, at seven P.M., saw *the whole of Dover Castle*, as if it had been brought over and placed on the Ramsgate side of the hill. The image of it was so strong that the hill itself was not seen through the image.

The celebrated *fata morgana*, which is seen in the straits of Messina, and which for many centuries astonished the vulgar and perplexed philosophers, is obviously a phenomenon of this kind. A spectator on an eminence in the city of Reggio, with his back to the sun and his face to the sea, and when the rising sun shines from that point whence its incident ray forms an angle of about 45° on the sea of Reggio, sees upon the water numberless series of pilasters, arches, castles well delineated, regular columns, lofty towers, superb palaces with balconies and windows, villages and trees, plains with herds and flocks, armies of men on foot and on horseback, all passing rapidly in succession on the surface of the sea. These same objects are, in particular states of the atmosphere, seen in the air, though less vividly; and when the air is hazy and dewy they are seen on the surface of the sea, vividly; and when the air is hazy and dewy they are seen on the surface of the sea, vividly coloured, or fringed with all the prismatic colours."

"That the phenomena above described are generally produced by refraction through strata of air of different densities may be prov-

Supplement, on DESMARRES account of Guthrie's process:

V.—AMENDMENT OF DESMARRE'S OUTLINE OF GUTHRIE'S MODE OF OPERATING.—In my Summary, it will be seen at page 138, DESMARRES represents GUTHRIE as standing *behind* his patient when operating by his favourite method. This is correct, so far, but only with reference to cases where the *right* eye (as purposely there italicised by me) is concerned.

Aware that imperfect impressions are almost inseparably attendant on too concise descriptions of surgical manœuvres, I wished to *amend* DESMARRES's outline; especially as he merges the operations, as performed by GUTHRIE and ALEXANDER, in one sketch. Instead of amplifying upon it from memory, with due deference to M. Desmarres, I felt it better in presuming upon the somewhat ungracious task of "setting him right" to move an amendment—direct from the fountain head. Accordingly I wrote to Mr. Guthrie as annexed, and was favoured,—in accordance with his military courtesy and business habits,—with an immediate reply:

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ed by various experiments. In order to illustrate this, Dr. Wollaston poured into a square phial a small quantity of clear *syrup*, and above this he poured an equal quantity of *water*, which gradually combined with the syrup, [at a certain stratum]. The word *syrup* upon a card held behind the bottle appeared erect when seen through the pure syrup, but inverted, when seen through the mixture of water and syrup. Dr. Wollaston then put nearly the same quantity of *rectified spirit of wine* above the *water*, and saw the appearance of the true place of the word *Spirit*, and the inverted and erect images below. Analogous phenomena may be seen by looking at objects over the surface of a hot poker, or along the surface of a wall or painted board heated by the sun. The late Mr. H. Blackadder has described some phenomena both of vertical and lateral mirage as seen at King George's Bastion, Leith, which are very instructive."—*Treatise on Optics, by Sir* D. BREWSTER.—H.N.

Liverpool, March 16th, 1848.

Correspondence on the subject: The author's Note to Mr. Guthrie:

My dear Mr. Guthrie,—I see in Desmarres's work on the Eye, published the other day, that he makes you always, when operating by *Extraction*, to stand *behind the patient*, and to puncture across the cornea, leaving a portion of the cornea uncut; then to introduce a needle and lacerate the capsule of the lens: then to *complete* the section of the cornea, *and extract.*

I recollect your operation *used to be* in front of the patient; and your incision across the cornea was rapid and complete?

I remember when there was difficulty, you sometimes used your own sheathed-knife; and if I do not mistake you always wished to complete the section of the cornea *at once.*

Desmarres book is very interesting.

Yours, &c.

H. Neill.

G. J. Guthrie, Esq., &c., London.

4, Berkeley Street, March 17th, 1848.

Mr. Guthrie's answer

My dear Neill,—I have not seen Desmarres's book.

I stand behind for the right eye, and in front for the left. I use Beer's knife for both. I will send you Charles's book [a] which describes acurately what I do.

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[a] This is the instructive work which I have already noted at page 171. Its value will be inferred by the reader, when aware that it contains the substance of that part of the Lectures on Surgery for years delivered by Mr. Guthrie to the Medical Officers of the Public Service, and to the Students of the Westminster and the Royal Westminster Ophthalmic Hospitals; as well as of those Clinical Lectures on Cataract given by his son (Charles G. Guthrie, Esq.) during the winter of 1844.

H. N.

The incision should be made at once, if possible, and *not too near the edge* of the cornea—a good eighth of an inch. I always cut out, unless the eye is spasmodic, when I do sometimes leave a little bit uncut at top: but the cleaner the cut, the better will be the result. When the iris falls on the knife, *rubbing* and *pressing* will disentangle it.

Yours ever,

G. J. Guthrie.

H. Neill, Esq., &c.
Liverpool.

Neill's operation by Reclination:

VI.—On the Operation for the cure of Cataract by Reclination.—The reader has but to retrace Stœber's concluding leaves from page 56, and to review the "drawbacks of several methods" sketched at page 133, to have a lively interest in considering how far Reclination is superior to all other known methods in the "*choice* of the process, *in the operation for Cataract in general.*" This will have been rendered virtually a matter of demonstration by the section, nearly so entitled, at page 148 of this Summary. Many of Desmarres's remarks are of extreme value, and admirably free of ambiguity. Whereas, with the exception almost of the standard works by Lawrence and Guthrie, in this country the simplest and the very best operation is made to appear complicated, and as if accompanied with many dangers.

The superiority, speaking generally, of Reclination over every other known process will be increasingly developed if we take *Extraction* and *Reclination*, and pit them against each other. They are the two leading operations for the cure of *Hard Cataract.*

No operator, I should imagine, is such a partisan of the *knife* as to use it for *soft* Cataract. In fact the *needle* is the instrument with which all kinds of soft Cataract should be removed; and the only real difference of opinion among eye surgeons of eminence, is in the treatment of hard Cataract. In short it comes to this: shall it be by EXTRACTION with the knife, or RECLINATION by the needle?—because "couching," or simply *lowering the Cataract* from the pupil—leaving it resting against the lower edge of the iris or the retina, is a process at once determined against.

Requisites for success when "Extracting" a Cataract:

For EXTRACTION, extraordinary endowments and great acquirements, on the part of the surgeon are indispensable. You require experience: I may well say, extraordinary experience. There is as much of truth as force in the observation—"to *extract* a Cataract well, you must first put out a hatful of eyes." You also require an experienced assistant; and on the patients' part exceeding steadiness and nerve. You require a full prominent eye—an ample anterior chamber—a well and fixedly dilated pupil—a substantial vitreous humor. The cornea should be fully cut across *at once*, and smoothly: no hitching or botching: the least bungling will floor the operation. You require the lens to glide nicely and gently through the wounded cornea, into your hand; and then only is extraction well done. Now does not such a string of indispensables amount to something considerable? The requirements moreover, are understated. It will appear presently, if I exaggerate. Those who know anything about the matter are aware, the absence of any one of the series, in the majority of instances,

suffiees to ereate a failure. Of the after risks of inflammation, by wounds and displacements, I do not speak: and yet in turn, they are neither few nor insignificant.

Advisedly, and firmly then, do I eonsider *Reclination* not only to be the prcferable operation, but that it is the best of any. RECLINATION is also best adapted to thosc cases where "extraction" is most recommended; for instance, where you havc a "spacious eyc and where you have a hard lens."

Superiority of Reclination:

Although Extraction is more complieated, yct Reelination to be suceessfully performed requircs dexterity. But it does not pre-require of the operator to "put out a hatful of eycs" in gaining his experience. By attention to the plain rules I proceed to give, RECLINATION may be performed with eredit to himself by any surgeon.

There is no neccssity that your assistant shall bc experienced. Any onc who will quietly retain the paticnt's head against the chest as a point of support, is an available assistant. The upper eye-lid may be raised by the co-operator; but if he is not to be trusted so far, thc surgeon must do so: or he may use the *speculum* reeommended by Mr. GUTHRIE.

The Author's process:

The operator, while he fixes—say the patients *left* eye with his (the operator's) left hand—thc proeess is done thus: and I am supposing that the speculum is not used. The second finger raises the upper eyc-lid and fixes it against the eye-brow. The first finger depresses the lower lid. The eye is thus firmly enough fixed: its outer

portion is free to be punctured, and there is no impediment to a thorough inspection of the pupil. A *flat* straight needle, with two cutting edges running to a point is carried, at the eighth of an inch from the cornea, towards the very centre of the eye through the sclerotic. The needle must not be poked into the lens. As soon as it is judged to be behind the *iris*, it should be gently forced to the anterior of the lens, and posteriorly to the iris, *forwards* toward the pupil. Do all gently. Let there be no abrupt or sudden motion. The point of the needle seen in the pupil, is now to be depressed, and *pressed down* the face of the lens to its lower edge, and carried back *below the lens* right into the vitreous humour. The needle is then moved horizontally backwards and forwards, so as to cut a free course in the vitreous body for the passage of the lens. All this is a *continuous*, momentary, and essential movement. Attempted otherwise, a laceration of the vitreous capsule is not easily accomplished: and should the membrane be tough, and not lacerated, the lens may be turned topsy-turvy, and tilted into the anterior chamber.

The needle having made its way through the capsule of the vitreous humor, now comes back to the anterior of the lens. Commence pressure with it, to cause displacement, by resting heavily on the anterior portion of the lens. The lens now moves downwards. The needle presses down also, and the lens begins, technically to *recline:* that is to say, it turns backwards.

The needle ought to get on the (now) top of the lens; and away it goes, launched as it were into the vitreous

humor. Its position is supine, offering its whole flat surfaee opposed to the vitreous humor. It eannot rise up: its flatness is also opposed to the retinal portion of the vitreous humour.

It only remains for the parts to beeome adapted to their new position, and the ease will be as brilliant as the most enthusiastie eye-surgeon eould desire.

Results of Reclination, and of Extraction, contrasted:

Sueh is my favoritc operation for the eure of Cataraet by RECLINATION—not as hitherto deseribed, confusedly or with needless elaboration in books. In homely language, I will pit hundreds of cases of *Reclination* which I have suecessfully performed, against the very best cases of *Extraction;* and the eyes of my patients shall show as little injury surgieally produced, *aye and less,* than the opties of those who have had the rare good luek to have been "touehed off" by the most dexterous "Extraetor."

In fairness I would have it borne in mind that *I do* EXTRACT, as on patients where there is reason to fear that a rheumatie tendency would be apt to set up slow and teasing inflammation. I am neither a bigot, nor in a state of monomania like an indiseriminating partisan in favour of one operation to the exelusion of others; and I should be misunderstood, were it supposed that I abjure all operations for the cure of Cataraet, exeepting that by *reclination* alone.

What I have stated in foregoing parts of this work, partieularly at the seeond paragraph of page 148, on the evils of undue predileetion; together with the praetieal

suggestions at page 149, and the reasons why "all operations are not equally successful" at page 153,—will surely protect me from misconception with the honorable and the candid. I respectfully refer to the passages instanced, and to the general tenor of everything I have written on the subject. MAGNE's position that a professional man should be able to perform every operation in point, is just, and I adopt it. Nevertheless, I have a favorite process, namely, RECLINATION; and I consider the success which attends it, amply justifies the favouritism which it enjoys in my estimation. There are exceptional cases; such as hard, brown, or amber Cataracts, which so often occur in those of a RHEUMATIC habit of body. As regards patients so circumstanced, and with eyes well shaped, I would prefer *extraction*, the general inferiority however of which process to *reclination*, has been any thing but overstated by me. Whoever should erroneously conceive that I have exaggerated the difficulties, or unduly swelled the catalogue of *requirements for success by* EXTRACTION, must be steeled against proof to the contrary, if the annexed high-minded admissions from the work of one of the ablest operators by "extraction" fail to satisfy them, and open their eyes to the true state of the case. Just look here: the evidence I adduce is from the united work of father and son; and to GUTHRIE the elder, as we all know, belongs the honour of having, with a fame that is European, made the operation by extraction, his own:—

Eye-surgeons should be able to perform any and all of the different operations:

GUTHRIE on Extraction:

"The operation by extraction ought only to be performed in cases of hard Cataract, which may be easily distinguished from all others by persons of moderate experience, it being impossible to mistake a hard Cataract for any thing else but what it seems to be and really is.

GUTHRIE on the difficulties of Extraction:

The surgeon who proposes to perform the operation for Cataract by extraction, should have been accustomed to operations on the eye. He should have performed every other several times over, before he approaches this, the *ne plus ultra* of perfection in such operations; and his hand should be so steady that the point of the knife, when duly poised between the fore-finger and thumb and slightly resting on the second finger, shall not be seen to move in the slightest degree for twice the time necessary for the performance of the operation: and no man should attempt it, unless his fingers and nerves are of a conformation to admit of this being done. Practice in operating often gives a confidence which overcomes this evil, when it depends on nervousness alone; which is the reason for the direction given that it should be the last operation on the eye the inexperienced surgeon should attempt. If the defect or tremor is a physical inconvenience, the surgeon who is the sufferer should not operate by extraction."

"The operation by extraction should always be done by making the incision upwards, and any deviation from this should be considered as an exception to the rule, caused by the great inconvenience which would attend its performance upwards, from the protuberance of the orbit, the sunken state of the eye-ball, or from that fear which will sometimes so pervade persons, that they cannot be induced to turn the eye downwards, so as even to allow the pupil to be seen, much more to expose the upper part of the cornea. In such cases the division of the cornea must be effected downwards, or downwards and outwards, which if it can be done, prevents the edge of the flap of the cornea from being raised by the edge of the lower eye-lid, an accident which will not however occur so often as is supposed, if the incision should have been happily made. The real evil of the incision downwards is, that the edge of the flap will be raised more certainly when the incision has not been well made; and that when any accident occurs, of whatever nature, to prevent the adhesion of the incised parts by the first intention or the adhesive process, there will inevitably be a cicatrix of a greater or less extent, into and behind

which the pupil may and usually will be drawn, so as to prevent vision. If such accidents should occur when the incision is made upwards the lower part of the cornea is clear, and the iris behind it is sound, in which an artificial pupil may be made with the greatest advantage; a small pupil below being of much more advantage than a considerably larger one above. The irritation and distress arising from exactly the same accident upwards, is nearly as nothing when compared with what takes place when it occurs downwards. Untoward events:

The position of the patient is of importance. Some operators prefer the recumbent. I always place the patient in a high-backed chair, with the head well supported, and capable of being turned a little backwards; but whatever may be the position preferred, it is advisable to adopt it always if it can possibly be done. There is something in the habit of doing a thing; and a slight change from the usual mode of operating may lead to an untoward event, that might perhaps have been avoided. The surgeon should always operate with the hand he is in the habit of using commonly. A man may learn to operate well with both hands, but unless he is naturally ambidexter, he learns it at the expense of many an unfortunate person, who pays with his sight for the acquirement of a very unnecessary dexterity, which is by much too dearly purchased, and at by far too high a price to avoid a simple change of position. To prevent this dreadful evil the surgeon should stand behind the patient when operating on the right eye, and before him when operating on the left. Best posture for the patient

Effects of *habit*, as regards the operator:

The patient should be placed opposite a single clear steady light, without sunshine, and a northern light is the best, although it is not of much consequence what light it is, provided it is unaccompanied by the beams of the sun. He should be seated in an arm chair, the back of which should be low enough to support the head when gently inclined backwards. A night-cap fitted exactly to the head, so that it cannot move, should now be put on: the fore part should be turned up if it comes too low How to seat the patient:

down on the forehead, and the middle of a light thin spongy kind of linen bandage, two inches and a half wide, and just long enough to cross over the eyes and to pin on the sides of the head, should be sewed to the centre of it behind, ready for use.

How to extract Cataract from the *right* eye:

For the operation on the right eye, the surgeon should place himself behind the patient, and he will usually find it necessary to stand on a stool, in order to raise himself to such a height that he may readily lean over, and have his hands at perfect ease; and in that position and distance from his own head or chest, which is most convenient to him. The patient's head being a little inclined backwards, and duly although gently and comfortably supported by the cushion or back of the chair, the surgeon leaning over from behind, brings the *two* fore fingers of the left hand over the forehead gently down on the eye-lid, and raises it up slowly and tenderly, so as to fix it ultimately against the upper edge of the orbit; and to be able to retain it there so perfectly with the end of *the* fore finger only, that the patient cannot lower it, or close the eye-lid by any effort he can make. He should also be able to do this, and to make a little pressure on the eye-ball, in order to fix it at the moment the incision is begun. As soon as the index finger is in this position, the second finger leaves the upper and lowers the under lid pressing it towards the edge of the orbit below. The eye is thus completely exposed, and may be almost fixed between the two fingers. To do all this well requires a certain degree of practice, but which is very easily acquired. It must be done very gently, very tenderly, and without giving pain, or almost uneasiness. The error usually committed is in using too much force with the extremity of the fore finger, which gives pain and makes the patient swerve; and it is an error of such great importance, that the surgeon must practice this part of the operation until he feels that he does it as a matter of art, not of force.

How from the *left* eye:

The left eye may be fixed in a similar manner; or the surgeon standing before the patient, raises the upper lid

with the side of the fore finger of the left hand, and depresses the under lid with the thumb, the hand being over the nose. The pressure of the fore finger tends to fix the eye at the same time, and to render it as immoveable as possible; and this mode of proceeding I generally adopt in preference for the left eye.

Popular fallacies: the *eye*, in fact, suffers less from violence, comparatively, than any other organ:

The eye being thus opened, and the eye-lids retained asunder, the eye loses all the extreme sensibility with which it is endowed for its security and preservation in its ordinary state. Public opinion, which on medical subjects is generally erroneous, although for the most part founded on professional authority, is in no instance more injurious than in relation to the eye. It pronounces it to be an organ of a very delicate nature, exquisitely sensitive, requiring the greatest delicacy of touch, and the utmost nicety of management; which opinion some oculists formerly found it convenient to support, and which the public may still continue to believe without any great disadvantage; but students in surgery must be taught otherwise. They must learn that the eye is not so very delicate; that it will suffer more comparative violence with less injury, than any other organ of importance in the whole body; that so far from being exquisitely sensitive, it is when exposed in a healthy state, nearly the reverse, only becoming permanently so on the occurrence of inflammation; and that the ablest and most successful operators are not apparently, although they are in reality, the most tender in their proceedings. The opinion of the exquisite sensibility of the eye has arisen from the pain which is felt on the admission of a small piece of dirt, or a fly between the eye-lids; but this occurs from a wise and preservative provision of nature, on account of the insensibility of the eye-ball itself. Let the eye-lid be raised, and the same piece of dust applied to the surface of the eye, no pain and scarcely a sensation will be produced; remove the piece of dirt, turn out the lid, and whilst it is retained everted, place the piece of dirt upon it, no greater sensation will be induced than is felt when it is applied to the eye-ball. The inference is, that both surfaces when touched separately, are nearly

Source of the fallacy:

Providential and beautiful provision of Nature, as respects the *eye* and its sensations.

insensible to this species of irritation. But let the same piece of dirt be put between the eye-lid and the eye-ball, and the sensation produced is exquisitely painful. To give rise to this sensation, it is necessary that the two surfaces should come in contact, and that the foreign body be grasped between them. If this were not the case, an irreparable injury would often occur to the transparent part of the eye before it would be observed; and if the raising of the lid, and the separation of the surfaces did not nearly annul sensation, an operation could not be performed for Cataract; for who could bear quietly the sensation which must arise from pushing a needle into the eye, if it were analogous to that arising from a fly, or a dry solid substance between the eye and the lids? The experiment may be tried in a very simple and conclusive manner by any one on himself, by merely keeping the lids apart by an effort of the will, when the end of the finger may be placed boldly on the eye-ball without any inconvenience. Inflammation by enlarging the vessels, gives rise to pain in the same way; and the sensation is at first, as if some extraneous matter were interposed between the lids. The sensibility presumed to exist in the organ naturally led to the conclusion, that the operations required to be performed upon it must be difficult of accomplishment; and the science of optics, in showing the beautiful arrangement of its structure, and the complexity of its functions, induced a belief that the slightest alteration in its composition must be fatal to its mechanism: but this is not found to be the case. Few persons can however duly estimate the liberties that may be taken with the eye, until they have seen several operations performed; when the false ideas they have imbibed will be completely removed, and *new feelings will arise in admiration of the benignity of the Creator; who in rendering the eye-ball nearly insensible, enables it in its quiescent state to undergo those operations which are frequently necessary for the recovery of sight.*"

Great liberties may be taken with the EYE.

Such are the clear and forcible views propounded in Mr. GUTHRIE's work already described by me, with its title, at page 181.

To terminate this section, I have a parting word to say as regards the management of "Secondary Cataracts." In the first place, where I have to deal with what I apprehend DESMARRES means by the swelling-kind, or demi-soft Cataract, here also I use the NEEDLE. We have a hard nucleus: the circumfcrence is demi-soft, and the capsule still almost transparent. In cases of such a nature, I do not extract—nor depress—nor recline. I introduce a double-edged *cutting-needle;* and all of the Cataract that is solid, I carry well backwards, and downwards, (*out of the axis of vision*) consigning it to the dissolving action of the aqueous humor. I next lacerate and dilacerate—cut up and bear away—all opaque fragments; and then I cut freely backwards and forwards, so as to clear the pupil of all risk of bands, or larger opaque masses of capsular matter. At page 162, there is a practical hint of consequence. No one inexperienced in eye-practice, who examines a lenticular capsule in *health,* (though delicate,) and who again explores it when under injury or active disease, would suppose there could be such a change. The capsule actually grows as tough as "gutta percha" or india-rubber; and its attachments become so firm, that sooner than yield they tear away the iris from its ligament. Hence in old "false Cataracts," and growths such as we are considering, if the vitreous humor be not diseased, it is better to make an opening in the cornea and hook out and snip off the requisite portion, than risk the "*needling* manipulation" with a view to lacerate or detach such obstinate and troublesome complications. Often have I been provoked, when to all appearance I have succeeded in thoroughly removing such bands by the needle, to find them once more in their old

The Author's mode of managing *Secondary* Cataracts:

False Cataracts, and *growths*, how treated:

station! In nine-tenths of cases, such an annoyance may be prevented if we would but time the second operation sufficiently soon after the first—to anticipate the period when such bands pass into a state more troublesome to disperse than tendon itself.

I operated last autumn upon a lady, a member of a noble Cheshire family. I had to use my needle four or five times before I obtained a clear and beautiful pupil. The case did excellently; but the toughness of the bands was extreme, and nearly foiled me. I have frequently been "much put about" by such cases, especially in congenital Cataracts, where absorption is slow. In all such subjects, I recommend that the second operation should soon follow the first.

Note on supposed *absorption.*

I have also a practical remark to make about an accident alluded to by DESMARRES. The reader will find it in the last column of the tables, page 142, second paragraph. It is there written—"should the point of the instrument break, leave it in the eye for absorption." For absorption? I contend, advisedly, it will *never be so absorbed.* Did a bullet in the human body of soldier—sailor—duellist, or recipient under any circumstance, ever become absorbed? Whoever knew of a grain of shot in a poachers' or a dog's shins, ever really disappearing by absorption? I have removed a bit of copper-cap from an eye after it had been in the organ more than two years. It was as perfect and shining as when it entered. I have seen pieces of shining steel, in the cornea, which had been imbedded there, unchanged, during half a century.

VII.—On probable advantages derivable from VERATRIA, in closing the pupil.—The use of balladonna, and still better of Atropine, in *dilating* the pupil, being enforced in my notes; I would here call the attention of parties interested, to the advantages derivable from the contrary action of *veratria*, in *closing it*. *Veratria:*

Having for many years past, closely watched the effects of veratria when absorbed by inunction upon the temples, napc of the neck, and eye-lids—during which I recognised its power in contracting the pupil; I devote a few lines in this place to a further notice of the action in question, than I had occasion to go into, in 1840. [a]

Here is my opinion:—

With reference to VERATRIA some would say its action is *specific* in closing the pupil. Action of VERATRIA in *closing* the pupil:

We have belladonna acting specifically in opening the pupil. This is accounted for on the supposition that the drug paralyses the circular muscle of the iris. The great advantages in eye-practice derivable from belladonna, and better still from the instillation of a solution of its salt, *atropine*, we now well know. Under circumstances of iritic inflammation, whether during infancy, or connected with the poisonous influence of constitutional taint, or when set up by concussion or wounds—in *atropine* we

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[a] See Neill's practical remarks," title 7th, page 21, Second Edition of "Report of the Liverpool Eye and Ear Infirmary for the year 1840."—H.N.

Opposite actions of Belladonna and of Veratria:

possess a potent and indeed indispensable power, for expanding the pupil, and keeping its inner circle so widened as to prevent permanent closure; and for securing a broader field for observing deep seated disease, as well as for operative movements. On the other hand, in VERATRIA we have a *contractile* agent, of great use, as I have satisfied myself, in many cases. Where nervous energy has become impaired, and the pupil languishes and hangs wide open; by virtue of veratria I have shut up the pupil to its natural size. In some cases I have succeeded in restoring the mobility of the muscles of the iris; and have overcome paralysing effects where the glare of too much light has acted injuriously on a retina already morbidly debilitated, and rendered insensitive to the stimulus of ordinary light. So much for FACTS. As to their *explanation* I very much doubt if veratria acts as a narcotizer; that is upon the straight muscles of the iris, as Belladonna does on the circular muscle. My belief is, that it acts on the circular muscle *as a stimulant*. If so, we have the agency of Atropine paralysing the circular muscle of the iris; and a diametrically opposite *cause and effect* in VERATRIA increasing its energy and stimulating its contractility.

Hints as to the effects of powers in *Cayenne* pepper, and *Eye-bright*:

In cayenne and other peppers, there is some salt or power, which also as a stimulant produces closure of the pupil in *amaurotic* eyes. The contractility however so produced, is very transient. [a]

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[a] At a future day I will lay before the profession the results of some as yet imperfect observations, on the effects of peculiar preparations of *Capsicum* and of our little indigenous plant, the Euphrasia, or *Eye-bright*.—H.N.

VIII.—COMPENDIOUS REMARKS

ILLUSTRATIVE OF THE INHALATION AND USE OF

CHLOROFORM AND ÆTHER.

On the inhalation of *Chloroform*; and medicated vapours:

As I have elsewhere stated, the effects of this powerful and valuable class of agents—with the mode of their administration, are so inviting to every philanthropist, that I recur to the subject more fully than was convenient in the note on CHLOROFORM and *etherization*, at pages 44 and 45 of this work. Assuming that the reader, who takes any interest in the matter, will favor me by perusing what, in passing, is there set down; I conclude, as promised, with a compendious article illustrative of the inhalation and use of "Chloroform" in the operative department of leading cases of eye-surgery.

The Author's views on Ether-vapour in 1841:

As I have put in some claim as an humble pioneer towards its complete discovery—a discovery which unquestionably took place in America—I will state on what grounds I rest my title to be considered as having aided that consummation. Eight years ago, I published a work on the ear; and in 1841 the same work was published in New York, Philadelphia, and *Boston*. I gave a regular diagram of an apparatus for the administration of Æther by the *eustachian tubes* (air-passages from the throat) for the cure of some forms of deafness, and for the relief of *painful affections* of the inner ear by the induction of

Æther-vapour. Well, from Boston, in 1846, we have a reflex importation, (matured certainly to a climax, entitling the party to the just credit of a completc and triumphant discovery)—to the effect, that Æther-vapour will not only soothe pain, but also produce complete insensibility to pain.

American edition of Neill's views, eight years since:

It is strange if a thousand copies of the 4th edition of my little work, printed by Mitchell and Company, of Liverpool,—regularly shipped and entered through the Customs, and extensively circulated in America, from the towns specified in its title page:—it is strange that such a pamphlet (telling of the very agency, and declaring the efficacy of Æther-vapour in relieving pain,) should have been five years in Boston, and yet that its suggestions, apparently should not have been seen—at any rate not acknowledged—by the new discoverer; who indisputably matured the great fact that the direct inhalation of Æther *by the lungs*, soothes, and at last so stupefies, as to render its recipients unconscious of pain during surgical operations!

Experiments and final discovery by Mr. Horace Wells further acted on by Doctor Morton, of Boston:

I have thus gone into particulars: self-justice entitling me to express my surprise as submitted. And in doing so, I disclaim anything in derogation of the enviable meed of praise due to Mr. H. Wells, a dentist of Hartford, in Connecticut,—whose communications to Dr. Morton (of Boston) were made in 1844; that is to say, *four years after a fourth edition of my pamphlet* as aforesaid, *had been in circulation in America.* This fact may be noticed as an instancc, in the words of Mr. Waldie, of "how long men may stand on the brink of a discovery

without reaching it, to which subsequent reflection may show them, that *many circumstances* have pointed." [a]

Whether Drs. Morton and Jackson, and others of Boston, ever saw my publication, is best known to those gentlemen. But the statement of Mr. Horace Wells, of his communication (in 1844) to Dr. Morton, in connection as I apprehend with what Dr. Morton and others possibly knew of my hints on the action of Æther-vapour in relieving pain, seem to have had their share of influence in leading Dr. Morton to extract a tooth from a patient whom he had caused to inhale the vapour of Æther, and who "avowed a total unconsciousness of its removal." This took place in September, 1846; and from that hour the discovery was made known in America, and speedily found its way to this and other lands to meet the advocacy—scepticism—and abusive opposition, which mark the career of every thing *new* under the sun.

Of the various Essays on the subject, Mr. Waldie's preferred:

The completion of this discovery constitutes one of the most wonderful of a remarkable age. Various essayists have since made it a medium of self-advancement. From all that I have yet seen, and as each publicist has borrowed freely from the views of "his contemporaries," I have no hesitation in avowing my preference for Mr. WALDIE's little tract on the subject;" [b] of a part of which, with super-

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[a] WALDIE on *Chloroform*, p. 3: Liverpool, 1847.

[b] Read by Mr. D. WALDIE, at the Meeting of the Liverpool Literary and Philosophical Society, held at the Royal Institution, on the Evening of Monday, the 29th Nov., 1847.

added views of my own, the sequel [in close type] constitutes the acknowledged substance.

Chloroform is stated to be an agent producing insensibility to pain, for which purpose *inhalation* is its mode of administration.

Effects of breathing medicated vapours long known:

The power of *various substances* when in the state of vapour, to affect the animal constitution has been long known. This has been observed more generally in the class of substances called narcotics than, probably, in any other. In the smoking of opium or tobacco, for instance; or in the intoxicating effect of the atmosphere in apartments containing large quantities of wine or spirits.

Enthusiasm of Dr. Beddoes, fifty years since:

The discovery of various substances in the aëriform state, possessing different properties, opened up a field of investigation previously unknown. Great expectations were entertained of the probable utility of *gaseous* bodies, as *remedial agents*. The late Dr. Beddoes who was nearly wild on the subject, thought that all diseases might be cured by breathing a medicated atmosphere. In 1798, he opened a "*pneumatic institution*" at Bristol, for that purpose. His scheme was unsuccessful; but it was the means of introducing to him Davy, then a youth, who was recommended to him to conduct his chemical processes.

Adventurous youth—of Sir Humphrey Davy.

Discovery of the *Laughing Gas*.

Davy, (afterwards the celebrated Sir Humphrey) with great boldness investigated the physiological properties of various gases by trying experiments on himself, which resulted in the discovery of the curious properties of nitrous oxide gas. The effects were—giddiness; a delightful sense of thrilling in the chest and limbs, acuteness of hearing, brilliancy of all surrounding objects, and an unconquerable propensity to muscular exertion or laughter. These were of short duration, and were not followed by the depression and nausea consequent on the use of spirits or opium. The effects, however, were not uniform; some persons having been affected with weakness, tendency to faint, loss of voice, and insensibility.

It has been long known, though not very generally, that the vapour of *æther* possesses similar properties to nitrous oxide gas.

As far back as 1818, there is an article in our *Quarterly Journal* of Science, where it is recorded—"When the vapour of æther mixed with common air is inhaled, it produces effects very similar to those occasioned by nitrous oxide. A mode of ascertaining the effect is obtained by introducing a tube into the upper part of a bottle containing æther and breathing through it. A stimulating effect is at first perceived at the epiglottis, but soon becomes very much diminished; a sensation of fulness is then generally felt in the head, and a succession of effects similar to those produced by nitrous oxide. By lowering the tube into the bottle, more of the æther is inhaled at each inspiration; the effect takes place more rapidly, and the sensations are more perfect in their resemblance to those of the gas.

Extract from the British *Journal of Science* thirty years back:

"In trying the effects of the æthereal vapour on persons who are peculiarly affected by nitrous oxide, the similarity of sensation produced was very unexpectedly found to have taken place. One person, who always feels a depression of spirits on inhaling the gas, had sensations of a similar kind produced by inhaling the vapour.

"It is necessary to use caution in making experiments of this kind. By the imprudent inspiration of æther, a gentleman was thrown into a very lethargic state, which continued, with intermission, for more than thirty hours, followed by great depression of spirits. For days the pulse was so much lowered that considerable fears were entertained for his life."

These facts are here noticed as a remarkable instance of how long men may stand on the brink of a discovery without reaching it, to which subsequent reflection shews us that *many circumstances have pointed.* The completion of the discovery now to be treated of, we owe to the United States of America. According to his own statement, Mr.

Non omnia possumus omnes.

Further progress of the discovery in America and Great Britain:

Horace Wells, a dentist, of Hartford, Connecticut, in reflecting on the fact that individuals, either in a state of high excitement, from ordinary causes, or *when intoxicated with spirituous liquors*, may receive severe wounds without manifesting the least suffering, was led to inquire whether the same result would not follow from the inhalation of some exhilarating gas, the effects of which would pass off immediately, leaving the system little the worse for its use. Accordingly, in 1844, he had himself a tooth extracted, and performed a similar operation on others, under the influence of nitrous oxide gas, without pain. He communicated the result of these experiments to Dr. Morton, Dr. Jackson, and others in Boston. Whether as the result of such intelligence, or from his own reflection on the effects of nitrous oxide and the vapour of æther, Dr. Morton, of Boston, in September, 1846, extracted a tooth from a stout, healthy man, whom he had caused to inhale the vapour of æther, and who avowed a total unconsciousness at the time of its removal. Forthwith, the discovery was made known in America, and speedily found its way to this and other countries.

Mr. Waldie, of Liverpool, suggests *chloric* æther to Professor Simpson, of Edinburgh, Oct., 1847: hence *chloroformosis:*

To Dr. J. Y. Simpson, professor of midwifery, in the University of Edinburgh, who has since carried on the investigation, and who had been for some time searching for other vapours possessing the powers of æther without certain disadvantages connected with its use, Mr. WALDIE, of Liverpool, suggested *chloric* æther, the result of which has been the promulgation of the effects of Chloroform, through the following circumstances :—

History of the discovery:

The term "chloric" æther, was at one time applied to the chloride of olefiant gas, or Dutch liquid of chemists. In 1831, Mr. Guthrie, an American chemist, attempted a cheap and easy process for its preparation, by a mixture of spirit and chloride of lime, and by collecting the product so long as it came over sweet and aromatic. This both Guthrie and Silliman supposed to be a solution of the chloride of olefiant gas, and called it "chloric æther." In reality, it was an impure *spirituous solution of* CHLOROFORM.

In 1831 Soubeiran, and in 1832 Liebig, prepared a liquid by a similar process, and separated the Chloroform. Dumas, in 1834, purified it fully, and found it to be composed of twelve parts carbon, one part hydrogen, and 106½ parts chlorine, and named it Chloroform, from being analogous to formic acid in its composition, but containing chlorine instead of oxygen. From theoretical considerations Liebig termed it perchloride or terchloride of formyle—it has a sweet taste and agrecable smell.

Progressive efforts of the continental chemists on the raw material, since 1831:

From the result of many inquiries, it was introduced into this country as a medical agent, first in Liverpool, where, indeed, in the form of a spirituous solution, it has been more known than in any other part of the country, and from which the knowledge of its medicinal properties has extended. About the year 1838 or 1839, a prescription was brought to the Apothecaries' Hall, Colquit-streett, one ingredient of which was chloric æther. No substance being known there of that name, having the properties of that with which the mixture had been previously prepared, Dr. BRETT, then our company's chemist found, in the United States Dispensatory, the formula for its preparation which has been noticed above, and prepared some. Its properties pleased some of the medical men, particularly Dr. Formby, by whom it was introduced into practice in Liverpool. When Mr. WALDIE undertook the management of the company's laboratories, the method of preparation yielded a product which was not of uniform strength, and sometimes of disagreeable flavour. Accordingly, he altered the process, by separating and purifying the chloroform, and dissolving it in pure spirit, by which a product of uniform strength and sweet flavour was always obtained. Thus prepared, it is much superior to specimens of London manufacture. *Medical prescribers in the habit of using it, prefer it greatly to sulphuric æther,* as possessing *all its remedial value,* and being *much more agreeable.*

Its use *Medically*, first tried in Liverpool in 1838.

Credit due to Dr. *Richard H.* BRETT, of Liverpool.

The vapour of the so-called chloric æther seems to have been tried as a substitute for sulphuric æther in February or March, 1846; but success could scarcely be

expected, unless the vapour of alcohol had possessed the same properties, it being composed principally of alcohol. When Mr. WALDIE, of Liverpool, was in Scotland, in October, 1847, Dr. Simpson introduced the subject, inquiring if he knew of any thing likely to answer. Chloric æther was suggested during the conversation, and being well acquainted with its composition, and with the volatility, agreeable flavour, and medicinal properties of Chloroform, Mr. Waldie recommended him to try *it*, promising to prepare some on his return to Liverpool, and to send it to him. Dr. Simpson having procured some in Edinburgh, obtained the results which he communicated to the Medico-Chirurgical Society, on the 10th Nov., 1847, and which he published in a pamphlet entitled—"Notice of a New Anæsthetic Agent as a substitute for Sulphuric Æther in Surgery and Midwifery." This is our old friend, under the new name of CHLOROFORM.

Professor SIMPSON states that *Chloroform* when inhaled is superior to *Æther*.

The professor's statement of its comparative superiority:

A much smaller quantity is required to produce the effect; though more costly, from the smallness of the quantity required it will be less expensive. Its smell is pleasant, and does not remain attached to the clothes of the operator, or exhaling in a disagreeable form from the lungs of the patient, as so generally happens with æther.

Its action is more rapid and complete, and generally more persistent, so that the surgeon's time is saved.

Most of those who have breathed both, declare that the inhalation and influence of chloroform are much more pleasant than those of æther.

How much will produce the desired effect:

The quantity to produce insensibility is from fifty to one hundred drops. It is applied by pouring it into a hollow sponge or a pocket handkerchief, and holding it over the mouth and nostrils, (not too closely at first,) so that the vapour may be fully inhaled.

The most essential point in the *administration* of these agents is to know when it has been carried far enough. Their effects vary with the quantity of vapour inhaled. In his treatise on "Æther-inhalation" Dr. SNOW has divided them into five degrees. Dr. SNOW's five degrees:

In the first degree, the recipient is conscious of where he is—what is going on around him, and can still direct his voluntary movements: the feelings are usually agreeable, often highly so. *This is not a proper state for performing operations.* 1st. Stage of *Etherization*

In the second degree, mental functions may be exercised and voluntary actions performed, but in a curious half-drunk manner. The movements are instinctive, guided by volition, though not by knowledge or reason. There may be struggling, screaming, or laughing: the patient may be tractable or obstinate; and dreams occur in this stage. An operation would cause pain, though the patient might, perhaps, not *remember* it. *This stage is not proper for operations.* 2nd. Stage:

In the third degree there is no evidence of any mental function being exercised: consequently, no voluntary motions occur; but muscular contractions, in addition to those of respiration, sometimes take place. The eyes are stationary, the breathing is usually regular and deep, though it sometimes stops for a time, and there may be muscular rigidity. In operations there may be some flinching and moaning, but *no articulate sound*, and there is *no recollection of what has been done.* 3rd. Stage:

In the fourth degree no movements are seen except those of respiration. Patients are incapable of being influenced by external impressions. The lids fall, the eyes are fixed, the muscles are all relaxed, the face is placid and expressionless, the breathing regular and automatic: sometimes there is snoring, a state which would be alarming if we did not know the cause of it. In this, the patient remains *perfectly passive* under *every kind of operation.* 4th. Stage:—*the only one suitable for severe surgical operations:*

Effects of a farther stage on animals:

In the fifth degree, not witnessed in the human being, the respiratory movements are more or less paralyzed, and become difficult, feeble, and irregular. If cruelly, or unduly continued, this ends in the death of poor animals: yet, according to Dr. Snow, animals always recover if the vapour is discontinued *before* the breathing has *actually ceased.*

What stages proper for operations?

The proper stages for operations are, according to Dr. Snow, the third or fourth. If there is snoring, the operation may be commenced, and the Æther temporarily withdrawn till the snoring ceases. The insensibility may be kept up for a long time *without risk*, by allowing partial recovery by withdrawing the inhaled agent for a time.

Conditions to be observed in producing insensibility:

Dr. Simpson points out the following conditions as necessary to be attended to in producing insensibility. 1st. Perfect quiet and freedom from all sources of excitement; 2nd. Avoiding as much as possible the stage of excitement by giving a full dose as quickly as possible, so as to produce the state of insensibility speedily: and 3rd.—Steadfastly deferring the commencement of the operation till the state of insensibility has been fully produced. It is advisable not to administer these agents soon after a meal, as the desired effects are not so easily produced.

Patients often recover promptly, frequently after delay, with perhaps wandering of the mind, or even excitement.

Diseases in which chloroform has acted like a charm:

"Anæsthesia," *(insensibility to pain)* by the inhalation of æther or chloroform, has been induced, not only in surgical operations, but in neuralgia and some other painful diseases: in passing otherwise intolerable galvanic currents throught umours: to relieve spasm as in whooping cough, and in parturition. [a]

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[a] Also to produce sleep, and break the chain of "horrors" in the *delirium tremens* of drunkards and smokers, and in highly excitable individuals where drunkenness has not been a habit.—H. N

In regard to the experience or sensations of recipients, Dr. FORBES, the late editor of the late British and Foreign Medical Review, gives us the following as the result of inquiries in the London Hospitals, by personally questioning *fifty-four patients* who had undergone, severe operations. "They were unanimous in their expressions of delight and gratitude at having been relieved from their disease without suffering. In listening to their reports it was not always easy to remain unmoved under the influence of the conceptions thereby communicated of the astonishing contrast between the external physical condition of the mangled body in its apparent tortures on the operating table of a crowded theatre, and the really happy mental state of the patient at the time."

Description of the sensations of fifty-four patients, on the authority of Dr. FORBES:

Professor SIMPSON, of Edinburgh, remarks, with respect to its employment in parturition, "I have never had the pleasure of watching over a series of better and more rapid recoveries, nor once witnessed any disagreeable result follow to either mother or child, whilst I have now seen an immense amount of maternal pain and agony saved by its employment. And I most conscientiously believe that the proud mission of the physician is distinctly twofold, namely, to alleviate human suffering, as well as to preserve human life."

Professor SIMPSON on its effects during childbirth:

Such is a sketch of this remarkable discovery of Æther-inhalation, and such the promise of improvement in the addition to it of Chloroform, a substance hitherto interesting only to the scientific chemist, but now of importance to all who seek relief from the sufferings to which their bodily constitution renders them liable.

A discovery such as this is sure to make its way, if experience should not prove that it is attended with counteracting dangers. All that its advocates can fairly demand is an impartial trial of its merits. The irrepressible desire in human nature to escape from pain will compel this, even though it may be opposed by the timidity, prejudices, dulness, indolence, or callousness of individuals. *Etherization* numbers among its supporters

names of the highest rank in the medical profession,—men who will carry on the investigation of its applicability to the various cases of human suffering with the perseverance which the importance of its claims demand, but whose judgment and intelligence will not allow them to admit these claims, except to such an extent as may be warranted by the experience arising from a judicious observation of facts,—the only substantial basis on which we can ground its title as an all-important addition to the healing art.

The opinion and experience of Mr. NEILL, of Liverpool

To the foregoing compendious article, abridged and modified from Mr. WALDIE's sensible and explanatory pamphlet, I add, that the public institution in Liverpool in which operations were first tried on patients in a state of *chloroformosis*, was the LIVERPOOL *Eye and Ear Infirmary*. I had great satisfaction in having Mr. Waldie to preside, while I operated, in presence of a party of anxious and delighted spectators. *Chloroform* is now of established merit. So is *Æther*, to which Chloroform is decidedly superior. But the use and reputation of both may be damaged, and brought into discredit, by abuse in the hands of the ignorant or the reckless. I

Cautions:

cannot sufficiently reprehend tampering with such powerful agents. Surely, none but the insane will ever try æther on themselves, *except advisedly* and in the *presence of men* competent to judge of its effects, and also that the intended recipient labours under no form of suspected or known disease, prohibiting its influence.

Ascertain the state of the lungs and heart, to avoid danger, or death:

I am of opinion that before giving Chloroform, patients should be invariably examined with the stethoscope. If the heart or lungs are in an unsound state, I say unhesitatingly that dangerous consequences may result from the

unguarded inhalation of Æther. For instance, we may have broken blood-vessels:—pulmonary apoplexy; or severe haemoptysis. Improper *chloroformosis* may excite fatal swooning, and cause dangerous congestions of blood in the parenchymatous tissue of the lungs, followed by REACTION which may end in the compromise of life through forms of latent and unmanageable inflammation, or tuberculous action itself, set up into fell activity.

Experiments of Mr. THOS. WAKLEY, of London:

There is no harm but good in declaring that the state of *chloroformosis*, like the state of "narcosis" from an over-dose of *laudanum*, is in certain persons replete with danger. I read with infinite satisfaction the series of *post mortem* examinations, with the round of experiments admirably planned and graphically narrated by Mr. WAKLEY, Surgeon to the *Royal Free Hospital of London*. They are worthy of all praise, experimentally and clinically; and are important additions to our knowledge of the effects of the subtle agents in question.

Use and abuse:

I feel it incumbent to speak out my mind plainly, and so to guard against the detrimental effects of abuse. In proper hands, what boons to suffering humanity, in countless forms of pain and sorrow, are not Chloroform and Æther. They truly are so, when administered as I have devoted considerable space to indicate. Candour also requires, the dangers apt to result from their abuse or improper exhibition, to be pointed out, as well as their overwhelming and predominating advantages. Such dangers by abuses in rash hands, only prove that

"Fools rush in, where Angels fear to tread."

Were they sufficient to deter sensible and experienced medical men from the *use* of Chloroform, then for similar reasons we may all "shut up shop" at once; and like guilty runaways, abandon sufferers in disease to die immeasurably sooner through *unmitigated pain and agony*, than do the victims even of diseases of the most malignant and incurable nature, when under able medical superintendence.

Other objections, answered:

Objections on the score of abuse, and occasional mistakes, are no valid arguments against the use of opium, or æther; any more than to using the *simplest* medicinals known to man. We own that a dose of opium or morphia, if wrongly administered, may destroy life by *coma*, and effusion on the brain, &c. In other cases, when unless the bowels are relieved, death is imminent, wary practitioners know nevertheless, that on the *proper selection* of a purgative, not only does recovery, but life itself depend. Castor oil and Epsom salts both "open the bowels:" but there are cases where a purgative is essential, wherein the one will *save life*, and a dose of the other *destroy it* by inflammation of the bowels! The difference between use and abuse—between discrimination and running blind risks—is a GREAT FACT, and applies to all kinds of medical and surgical treatment, or the equally fatal neglect thereof.

Fanatical objections, by the *ir*-religious:

Opposition of a very different kind has however been "got up" to the *use* of Chloroform by inhalation, and also to the vapour of Æther. To my surprise,—although I thought I had been long enough in the world not to be astonished at anything, however strongly suffused with

cant or absurdity;—but to my surprise, objections to rendering a poor creature insensible to the pangs of severe child-birth—to the wearying wearing pains of cancer,—and to an otherwise perhaps overwhelming *shock* of a surgical operation—have been raised on the daring and impious assertion that "*the law of God*" prohibits the practice! Also, that the "law of man and of nature, loudly exclaim against it," as was pretended long ago by a madman of the name of SQUIRREL, who took a deranged part, with those the late pious and profound theologian Dr. CHALMERS, of Edinburgh, equally well would have described as "small theologians"—when they denounced *vaccination* and protested against attempts to prevent *small-pox* "as impious and profane thus to wrest out of the hands of the Almighty, the divine dispensations of Providence." [a]

It is less surprising that such objections have been revived, and applied against CHLOROFORM than that they should have been designated "religious." Instead of being religious, they are most irreligious; and but for their manifest imbecility, would deserve the epithet *pro-*

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[a] See page 4 of SQUIRREL's "observations on Cow Pox, and the *dreadful consequences* of this new disease." See also Delafayes *Sermon(!)* on "Inoculation—an indefensible practice." Also Massey's "Sermon against the dangerous and *sinful* practice of Inoculation." In the time of Dr. JENNER some clergymen (narrow-guage men, or in the language of Dr. Chalmers—"small theologians") actually preached from their pulpits after that fashion. "Some went so far as to pronounce vaccination an invention of Satan himself, and its abettors were charged with sorcery and atheism"!!! Dr. Simpson, at pages 16-17 of his pamphlet on *Chloroform*, cites a number of the melancholy ravings of such misguided fanatics.—H.N.

fane. Men of such mind as SIMPSON, LIZARS, and Professor MILLER, of Edinburgh, must have felt this:—especially Dr. SIMPSON when penning his learned ANSWER to the self-styled "religious" objections, advanced against the employment of such agents, (from the Devil!) as ETHER and OPIUM. [a]

At page 18 of his "ANSWER," Dr. Simpson says:—

Opinion of the Rev. Dr. CHALMERS:

"My friend Professor Miller informs me, that when reluctantly consenting to write the elaborate article on Etherization, which he afterwards penned for the North British Review (No. for May, 1847), he stated to the late Dr. Chalmers, who solicited him to undertake the task, that if *he* 'wrote the medical, Dr. *Chalmers* should himself write the theological part.' Dr. Chalmers at once professed that he did not see any theological part pertaining to it. Mr. Miller then explained to him, that some had been urging objections against the use of ether in midwifery, on the ground of its so far improperly enabling woman to avoid one part of the primeval curse. At last, when Mr. Miller was enabled to convince him that he was in earnest in saying that such ground *had* been taken, Dr. Chalmers thought quietly for a minute or two, and then added, that if some "*small theologians*" really took such an improper view of the subject, he would certainly advise Mr. Miller not to "*heed them.*" Dr. Chalmers' mind was *not* one that could take up or harbour the extraordinary idea, that, under the *Christian* dispensation, the God of Mercy should wish for, and delight in, the sacrifice of women's screams and sufferings in child-birth. Perhaps he thought also, as I have heard other clergymen state,

N. B.

[a] "Answer to Religious Objections advanced against the employment of anæsthetic agents in midwifery and surgery, by J. Y. Simpson, M.D., F.R.S.E., professor of midwifery in the University of Edinburgh, and physician-accoucher to the Queen in Scotland." *Edinburgh*, 1848.

that if God has beneficently vouchsafed to us a means of mitigating the agonies of childbirth, it is His evident intention that we should employ these means. The very fact that we have the power by human measures to relieve the maternal sufferings, is in itself a sufficient criterion that God would rather that these sufferings be relieved and removed. If he had willed and desired them not to be averted, it would not be possible for man to avert them. For while it is our duty to avoid all misery and suffering that is avoidable, it would certainly be impossible for us to eschew any that God had permanently and irreversibly decreed should not be eschewed.

Dr. SIMPSON on other frivolous objections:

I have heard objections urged against the state of anæsthesia as a counteraction to pain in surgery and midwifery, on other and different grounds from any which I have yet noticed, viz., that in superinducing a temporary absence of *corporeal* sensibility, we also superinduce, at the same time, a temporary absence of *mental* consciousness. And it is argued that, as medical men, we are not entitled to put the activity and consciousness of the mind of any patient in abeyance, for the mere purpose of saving that patient from any bodily pain or agony. Some medical men even, have gravely pressed this argument. But if there were any propriety in it, why, then, these same medical men could never have been justified in doing what they have, one and all of them, done perhaps hundreds of times; viz., exhibit, by the mouth, opium and other narcotics and hypnotics to their patients, to mitigate pain and superinduce anæsthesia and sleep. There is no greater impropriety or sin in producing sleep and freedom from pain by exhibiting the medicine by the mouth, than by exhibiting it by the lungs. There is *less* impropriety in the latter practice than in the former, even according to the very doctrine of these opponents. For narcotic or anæsthetic agents which are swallowed, are far more prolonged in their "insensibilizing" action upon both the mind and body than those that are inhaled. The questionable character of the practice (supposing it for a moment to be questionable,) must be much less when the effect is short and evanescent, as with ether and chloroform

Self-stultifications:

when respired; than when it is long and protracted, as with opium, morphia, henbane, &c., when swallowed. The proper anæsthetic state is one physiologically and psychically analogous to natural deep sleep. It is an artificial deep sleep. Those who object and urge that we should never follow ourselves, or induce others to follow, the practice of voluntarily surrendering up our mental consciousness for a time, in order to avoid any corporeal torture or agony that we should otherwise endure during that time, forget how often and how long they and others are in the habit of voluntarily surrendering up their mental consciousness in common sleep, far, far beyond the time required merely for the refreshment and renovation of the system. Many thus *daily* surrender their minds and reason up for unnecessary hours to the state of unconsciousness existing in common or natural sleep, without any object except the reprehensible indulgence of sloth and indolence: and then they turn round, and declaim against others having induced upon them, at some *rare* and extraordinary time, the unconsciousness of artificial sleep, when there is a great and laudable object in view,—viz., the avoidance of excruciating corporeal suffering, and the saving of human life, by saving the human system from the shock and dangers accompanying that suffering. Besides those that urge, on a kind of religious ground, that an artificial or anæsthetic state of unconsciousness should not be induced merely to save frail humanity from the miseries and tortures of bodily pain, forget that we have the greatest of all examples set before us for following out this very principle of practice. I allude to that most singular description of the preliminaries and details of the first surgical operation ever performed on man, which is contained in Genesis ii, 21 :—"*And the Lord God caused a deep* SLEEP *to fall upon Adam;* and he *slept;* and he took one of his ribs, and closed up the flesh instead thereof." In this remarkable verse the whole process of a surgical operation is briefly detailed. But the passage is principally striking, as affording evidence of our Creator himself using means to save poor human nature from the unnecessary endurance of physical pain. "It ought to be noted (observes Calvin in his commentary on this verse,) that Adam was sunk

The first surgical operation ever performed on man, was by his merciful CREATOR who threw the patient into a deep sleep.

into a profound sleep, in order that he might feel no pain." In his collected commentaries on the same verse, Pool quotes different authorities for the same opinion, that this deep sleep was induced upon Adam in order that "he might not feel pain from the removal of the rib." And the *profundity* of the sleep, as expressed in the Hebrew, is also worthy of note. For the noun "*tardemah*," translated in our version "deep sleep," signifies, according to all the best Hebrew scholars, the deepest form of induced slumber. In the early and very literal Greek translation which Aquila made of the Bible, he renders, in this passage, the Hebrew word *tardemah* by the expressive Greek term *καταφορα*, a term which Hippocrates, Galen, Ætius, and other Greek physicians, used as implying that state of deep insensibility and total unconsciousness which in modern medical language we express by "coma" and "lethargy." Gesenius renders *tardemah* by the Latin word "sopor," the Hebrew term for common sleep being *shenah*. In the Vulgate it is translated "sopor," *(immisit Deus soporem in Adam.)* In the quotation which I have given from Calvin, that great authority renders the term *tardemah* by the expression, profound "sopor" *(profundo sopore)*; and Pool quotes different authorities to show that the Hebrew word does signify "sopor" of a profound kind, "*notat profundem soporem.*"

Literary annotations:

Since Professor SIMPSON has ventured into BIBLICAL scholarship, I may presume to call the attention of classical readers to passages of striking collateral interest bearing on the general LITERATURE of the subject.

Effects of *Ether* actually realise the marvellous "virtues" ascribed to ancient spells and draughts:

It is wonderful that the newly discovered effects of chloroform, and ether-inhalations, should be the consummation in our day—the realization, in fact, of the mythological and poetical "virtues" attributed to certain mysterious draughts, and wonder-working drugs, which have exercised the pens of the greatest poets of all time, from HOMER downwards.

Homer and Shakspere:

From school-boy recitations and closet study, we are all familiar with the "sweet oblivious antidote," yearned for with such pathos by *Macbeth* in his interview with his physician. SHAKSPERE describes him as asking for that ever-fabled "something," whereby to *raze out* "the written troubles of the brain," and assuage the pangs of a mind upon the rack, and to lull the troubled conscience which weighed upon the heart of his guilty partner in greatness. *Macbeth* implores of his doctor—

> "Canst thou not minister to a mind diseased;
> Pluck from the memory a rooted sorrow;
> Raze out the written troubles of the brain:
> And with some *sweet oblivious antidote*,
> Cleanse the stuffed bosom of that perillous stuff
> Which weighs upon the heart." [a]

Lethé:

That well-known passage, associated with others, naturally recals the *oblivious* effects attributed in Ancient Mythology to the waters of *Lethé*. Indeed, I have seen—and if my memory serve, it was in some American periodical devoted to Dentistry,—an article on the effects of Ether, headed "Lethe." But a classical revival, to my mind, far more striking than that, exists in the *Nepenthé* of old, whose wonderful effects are in striking coincidence with those produced by the inhalation of Æther or Chloroform.

The *Nepenthé* of HOMER: with which *Helen* drugs the bowl:

So far as my reading goes, I am not aware that *Nepenthé* has hitherto been referred to, by any of the multitudinous essayists—whether in their "table-talk," or when pamphleteering—on the extraordinary action of *Chloroform?*

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[a] *Macbeth:* Act v. Scene 4.

In the 4th Book of the *Odyssey*, here is Pope's version, line 301, of Homers account of the spell—which beauteous and "bright Helen" wrought, after the feast, by adding *Nepenthé* to what I take the liberty of calling the bowl of punch:—

"Mean time with genial joy to warm the soul,
Bright Helen mix'd a mirth-inspiring bowl:
Temper'd with drugs of sov'reign use, t' assuage
The boiling bosom of tumultuous rage;
To clear the cloudy front of wrinkled care,
And dry the tearful sluices of despair;
Charm'd with that virtuous[a] draught, th' *exalted mind* Its effects:
All sense of WOE *delivers to the wind.*
Tho' on the blazing pile his parent lay,
Or a lov'd brother groan'd his life away,
Or darling son, oppress'd by ruffian force,
Fell breathless at his feet, a mangled corse:
From morn to eve, impassive and serene,
The man entranc'd will view the deathful scene!
These drugs so friendly to the joys of life,
Bright Helen learn'd from Thone's imperial wife;
Who sway'd the sceptre where prolific Nile
With various simples clothes the fatten'd soil."

What the Nepenthé exactly was, has repeatedly exercised the speculation of scholars, and engaged the research of commentators of various ability. According to PLINY the naturalist, (21 and 25 ii) Τὸ *νηπενθέσ* was an *herb* which *being put into* WINE *driveth away sadness.* Whe- Mentioned by PLINY, MILTON, and SPENSER:

[a] "*Virtuous* draught:" virtuous meaning possessed of virtues in the sense of *power*, efficacy, &c. H. N.

ther it was our plant "bugloss" (wild penny-royal) or what it was, cannot be traced by botanists. HOMER's description, though brief, is exceedingly interesting. MILTON too, alludes to its effects in his Comus (v. 675-6.)

> "That *nepenthes*, which the wife of Thone
> In Egypt, gave to Jove-born Helena."

Dr. MAGINN, LL.D.:

Our own poet SPENSER also, has not overlooked it in his *Fairy Queen*. The late Dr. MAGINN, L.L.D., so accomplished as a Greek scholar, at the time he contributed the best of his celebrated *Homeric Ballads* to "Frascr's Magazine," resided in Liverpool. I have been reminded by Dr. THORBURNE, how much the "speculative wonder" what the Nepenthé really was, occupied Dr. MAGINN's thoughts. I cannot do better than prove this by appending a quotation from the twelfth of his *Epistles of the Literati*, wherein he applies the caustic to Dr. FARMERS' piebald essay on the learning of Shakspere.

"Mr. Upton is positive the *sweet oblivious antidote* inquired after by Macbeth could be nothing but the nepenthe described in the *Odyssey*.

Νηπενθές τ' ἄχολον τε κακῶν ἐπίληθὸν ἁπάντων.

There is, contends Dr. Farmer, no necessity of sending us to the *Iliad* or the *Odyssey;* for the circumstance of Patroclus might be learnt from Alexander Barclay's *Ship of Fooles:* "Who list the story of Patroclus to reade," &c.; and *nepenthé* more fully from Spenser than from Homer himself. Certainly more fully; for Homer dismisses it in six or seven lines. *Od.* δ. 220-226; but Spenser does not give that remarkable word which Homer supplies, and of which we find the equivalent in Shakspere.

Spenser's *Fairy Queen:*

I copy what Farmer quotes from the *Faërie Queene*, b. iv. c. iii. st. 43 :—

> "Nepenthe is a drink of soveragne grace,
> Devized by the gods, for to assuage
> Hart's grief, and bitter gall away to chace;
> Instead thereof sweet peace and quietage,
> It doth establish in the troubled mind,"
> &c., &c.

This is unquestionably a fine poetical amplification of of Homer, but it misses the word ἐπιληθον—*oblivious*. Where did Shakspeare find this? Perhaps in the Latin translation—"malorum *oblivionem* inducens omnium." Perhaps in Virgil's "longa *oblivia* potant." Certainly not in Spencer. It is fair to Upton to remark, that he is *not* positive on the point; nor does he say the antidote could be nothing else but the nepenthe described in the *Odyssey*. He quotes the passage from *Macbeth*, and then in a note *(Crit. Obser.* p. 56) merely says, "Alluding to the nepenthe, a certain mixture, of which, perhaps, opium was one of the ingredients. Homer's *Odyssey*, δ. 221, Νηπενθες," &c. There is no positiveness here; the allusion to the nepenthe is plain, no matter whence Shakspere derived it, and Upton merely indicates the source from which it must originally have been derived. I think a critical examination of the passages would lead to a strong suspicion that Shakspere had Homer in his eye. The medicament flung into the bowl by Helen to cheer her guests, was ἀχολον — anger-banishing, one that could "minister to a mind diseased;" νηπενθες, generally interpreted as sorrow-chasing, that could "pluck from the memory a deep-rooted sorrow;" κακων ἐπιληθον ἁπαντων —oblivion-causing of all troubles; that would "raze out the written troubles of the brain." "Give me the sweet oblivious antidote," says Macbeth, "that would cleanse the stuffed bosom of that perilous stuff that weighs upon the heart;" it is here, says Homer, the *nepenthé* would check the tear from flowing, even if father, brother, mother, or son, were slaughtered before the eyes of him who drinks the φαρμακον ἐπιληθον, the oblivious antidote,—

> " That nepenthes, which the wife of Thone,
> In Egypt, gave to Jove-born Helena."

The coincidence of the passages is so striking, that I think it impossible that Shakspere should not have read this part of Homer, at least, in the original or translation. There was, in spite of Farmer's affected doubt, no Chapman when *Macbeth* was written to assist him; but there were some curious French translations, and no lack of versions into the Latin. With respect to the incident of Patroclus, he *might* certainly have found it in Barclay; but he also *might* have found it in Homer, and I much prefer the latter supposition."—See Article, in *Fraser's* Magazine, September, 1839.

Whether Mr. Upton was positive the " sweet oblivious antidote" inquired after by Macbeth could be nothing but the *nepenthe* described in the Odyssey, I am sure had Dr. Maginn who wrote as quoted in 1839, been alive and with us now, he would have favoured the literary world with a special epistle to Oliver Yorke, full of exhaustless pleasantries, and might have ingeniously contended—not only that the *discovery* in 1847, of the magical virtues of Æther-vapour, is the realization of the nepenthé which Homer tells us Helen put into the bowl to cheer her guests; but also that the new agent which produces a state of trance and insensibility to pain—viz., *chloroform*, is in as many words nothing but the *sweet oblivious antidote* of Shakspere!

Concluding testimony of various Medical authorities, in favor of *Chloroform*:

While this sheet has been passing through the press, I perceive by the *April* Number of the British and Foreign *Medico-Chirurgical Review* that Professor Warren, of America, (" University at Cambridge, New England") has published a pamphlet of 96 pages, entitled

"*Etherization: with Surgical Remarks.*" I have not as yet been able to procure a copy, or even a sight of Dr. Warren's *brochure*, but through his dispassionate reviewer, in the 12th Article of Highley and Churchill's London British and Foreign *Quarterly Journal*, it appears that the use of ethereal inhalation "has made slower progress on the other side of the Atlantic—the country of its first introduction—than in the Old World; a circumstance that seems rather unaccountable, when the go-ahead tendency of our cousins of the Union is borne in mind. At the time of the publication of his treatise, we presume that he had not become cognisant of the virtues of *Chloroform;* as no reference is made to the introduction of this agent. His general conclusions are decidedly favourable to the use of æther in most severe operations." Dr. Warren

The "Address" of Mr. Curling, (lecturer on Surgery at the London Hospital,) February 9, 1848, is noticed *con amore*. His gentlemanly critic says— Mr. Curling

"Mr. Curling considers that the results of statistical inquiries on the mortality following severe operations, are so favourable as fully to warrant the surgeon in persisting in the use of Chloroform and Æther, notwithstanding the unfortunate demonstrations which have been recently given of their possibly-fatal consequences. If these statistical results should be borne out by further experience, we shall have no hesitation in saying, that no surgeon will be justified in the non-employment of a means so important to the safety of his patient. He would much more reasonably refrain altogether from performing an operation which is fatal in *two* cases out of every *five*, than from administering an anæthetic, which diminishes the mortality of the operation itself by *one* in every *five*, whilst it poisons *one* (we will say) in *ten thousand*. We use the term "poisons," because we do not think it right

Remarks on the Newcastle case:

to disguise our opinion that in the Newcastle case, death resulted from the direct influence of the chloroform, in spite of the very ingenious special pleading of Dr. Simpson. We deem it best to look the possibility well in the face, and to regard it in the same light as many other contingencies for which the practitioner must be prepared, in the use of therapeutic means of almost any description. If we are to be restrained from the employment of a remedy, or from the performance of a trifling operation, because it is remotely possible that it may give rise to serious consequences, then we must give up all reliance on medicines or on surgical skill, and leave our patients, literally and completely, to the curative powers of Nature. All our practice is a balance of *probabilities*; and all that we can aim at is, to do the greatest possible amount of good, with the least possible chance of evil."

Professor MURPHY, of London:

Dr. EDWARD W. MURPHY, Professor of Midwifery, *University College*, London, read a paper on CHLOROFORM to the *Harveian Society*, February 5, 1848, which *inter alia*, is thus reviewed;—

"Surely the accoucheur is not only fully justified in the careful and discriminating employment of chloroform; but, with such testimony in favour of its beneficial influence, he is highly blameworthy if he withholds it, in cases in which the induction of anæsthesia appears likely to be decidedly beneficial. There are some people, however, whose prepossessions *no* amount of evidence will remove."

That is very true! But with such incapables, it would be as unavailing to argue that *abuse* is not USE, as it would be to otherwise convince those who use "their *own* eyes" on all subjects, whether *without* or within their comprehension, and who *will* have it, that the Sun *moves* round the earth: as his *setting* and *rising*, night and morning, clearly *prove* to their peculiar satisfaction!

Among other observers on the action of Æther-inhalation, Professor Syme (now of London) has recorded his opinions in the *Monthly Journal* of Medicine, for August, 1847. Experiments by Syme—

Enemata of Æther-vapour have been administered in India by Mr. Crawford, who anticipated Professor Pirigoff, of St. Petersburgh, in the *rectum*-mode of inducing Ætherization. Crawford, and Pirigoff:

In *St. Bartholomew's* Hospital, London, Mr. Lawrence has used Chloric æther repeatedly, as recorded by Mr. Holmes Coote in the *Lancet*. Mr. Tracy, of St. Bartholomew's, has also contributed to our knowledge on this subject. The advantages derivable from Æther-vapour in obstetric-practice have also been observed upon by Dr. Protheroe Smith, and by Professor Siebald, of Gottingen. Lawrence, Coote, Tracy, Dr. P. Smith, and Professor Siebold:

I may also incidentally note, that a *novel* method of inducing *insensibility to pain* has been contrived in France. In Braithwaite's Retrospect of Medicine, (on the pre-authority of a communication in the *Lancet*,) Mr. Ducros is the French surgeon who has employed the *electro-magnetic current* for this purpose. Recipients subjected to the current have been rendered quite insensible to "pricking and pinching at all parts of the body: and *teeth have been extracted without their knowledge.*" *Novel* means discovered in France: *Ducros* on the effects of electro-magnetism:

Ducros has made several communications to that effect to the Academy of Science: also on the interesting effects of *electricity*, in overcoming the stupor of Æther-

ization. The action of "positive electricity," is an almost instantaneous antidote to the stupor caused by Æther; whereas the influence of *negative* electricity, instead of abridging the insensibility, has the effect of *prolonging it.*

When the influence of such powers is further verified at the hands of others, medical men will enjoy extraordinary command over different states of the system, in health and disease.

HUGH NEILL.

FINIS.

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[*By the same Author.*]

THE PRACTICE IN THE LIVERPOOL

OPHTHALMIC INFIRMARY,

For the Year 1834;

BEING THE FIRST SPECIAL REPORT.

By HUGH NEILL, Surgeon to the Charity.

Dedicated to the Trustees and Subscribers of the Institution.

—

Longman, Rees, Orme, and Co., London; W. Grapel, Liverpool.

The Third Edition.

A REPORT UPON DEAFNESS

WHEN RESULTING FROM

DISEASES OF THE EUSTACHIAN PASSAGES;

WITH

THE MODERN METHODS OF CURE;

BEING A PAPER READ TO THE

LIVERPOOL MEDICAL ASSOCIATION,

On the 19*th December*, 1839,

BY HUGH NEILL,

Surgeon to the Institution for Curing Diseases of the Ear, and Surgeon to the Ophthalmic Infirmary.

—

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introduced into British pharmacy in Liverpool, by Dr. Brett, who found the formula in the United S
Dispensary. It was Waldie of Liverpool who suggested chloroform to Simpson when he was seeking a subst
for ether (this fact is recorded in the histories of anaesthesia).

Neill's own claim to some share in the development of ether anaesthesis rests on a book on the ear, *pu*
in 1840, in which he recommended the administration of ether by the eustachian tubes for the relief of p
affections of the inner ear. One thousand copies of the fourth edition were sent to *America in* 1841 an
asks quite modestly whether it he not a possibility that his work came to the attention of Wells, Mor
Jackson.

Neill performed the first operations in Liverpool in which chloroform anaesthesia was used.

N Engl. J. M. 58. 1955.

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